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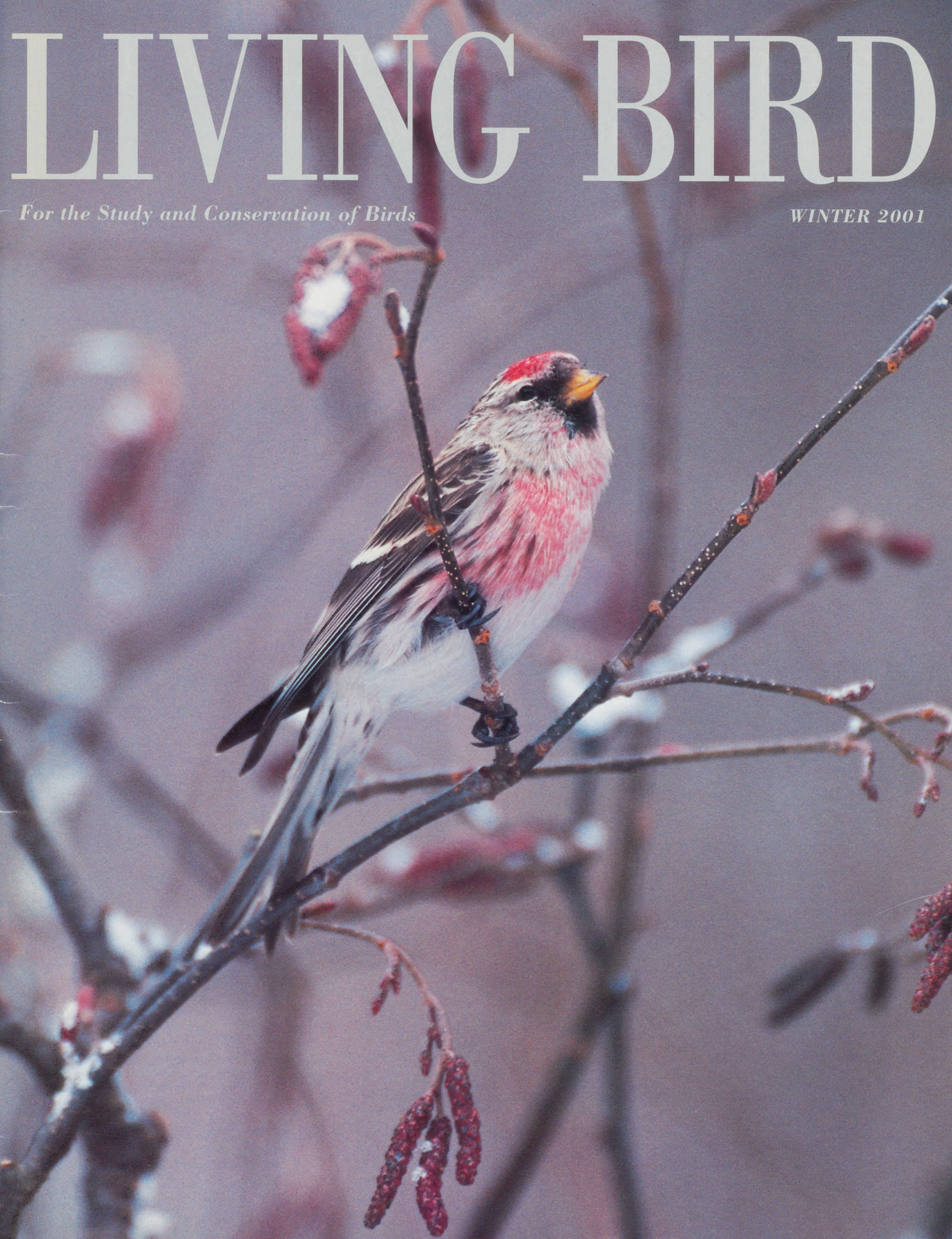
For the Study and Conservation of Birds

WINTER 2001



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LIVING BIRD

WINTER 2001 VOLUME 20 NUMBER 1

GREETINGS FROM SAPSUCKER WOODS

Last night was a special evening at the Lab of Ornithology. Famed birder and author Kenn Kaufman came to present a talk and sign copies of his new field guide. Despite the new-fallen snow blanketing the ground, people came from miles away to see him, packing the Fuertes Room to capacity and then some.

It was a perfect evening in every way, but for many of us it was tinged with sadness. This was the final public event that will ever be held in the old Fuertes Room. As we prepare to erect an expansive new facility (see "Building on the Past," Summer 2000), the exquisite bird paintings by Louis Agassiz Fuertes—which surround the room like a massive frieze—and the superb woodwork and glass-fronted bookcases will be carefully taken down and stored.

The paintings and furnishings were once part of an ornate private study in a Connecticut mansion owned by Frederick Foster Brewster, who had commissioned Fuertes in 1909 to design the room and create the paintings. Brewster later bequeathed the contents of the study to the Lab of Ornithology. The paintings and all of the fixtures and decorative panels were moved here in the 1960s and installed in the Fuertes Room, which was built to house them.

Now it's hard to imagine a time when the Fuertes Room wasn't part of the Lab. Some have called it the Sistine Chapel of birding, which isn't really that much of a stretch. It certainly is the heart of the Lab. Fortunately, this story has a happy ending. The Fuertes Room will rise again and be the heart of the great new Lab of Ornithology building soon to be erected at Sapsucker Woods. I hope you will all come here someday and see it.

Tim Gallagher
Editor-in-Chief

Cover: A male Common Redpoll provides a subtle blush of color on a bleak winter morning. Marie Read took this attractive portrait near her home in Freeville, New York.

Right: The Chuck-will's-widow is a master of camouflage, all but impossible to spot as it lies frozen in the leaf litter. Connecticut photographer William Burt traveled all over North America to document the elusive nightjar clan. See page 10.

Back Cover: The morning after an ice storm, this tiny nest in the fork of a sugar maple behind his house provided a picturesque still life for Pennsylvania photographer Mark Bilak.

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A photographic journey in search of nightjars.

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An intimate portrait of legendary bird artist Don Eckelberry.

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Letters

ALBATROSS CHASES

Clay Sutton's article "The Wild Albatross Chase" (Autumn 2000) was written in precisely the vivid, readable style we have come to expect from this author. I enjoyed it immensely. One small quibble, however. The sad Black-browed Albatross he refers to spent its 20 lonely breeding seasons not in the Orkneys, but at Hermaness on Unst, one of the Shetland Islands.

I should know: I missed out in 2000 at Cape May by scheduling my annual visit a couple of weeks too early, but in the 1980s I also missed out in the Shetlands by a couple of days. They say you can't win them all. But it would be nice to win just once.

Michael Murphy
Ithaca, New York

REAL LIVE BIRD SONGS

This is in response to John Fitzpatrick's "View from Sapsucker Woods" in the Autumn 2000 issue of *Birdscope.* I also have enjoyed recent broadcasts of the golf tournaments, which I thought were enhanced by the birdsong, albeit "canned." Even though Tiger Woods has made the sport slightly more interesting to those of us who previously couldn't have cared less, the addition of birdsong (which we strongly suspected was not live) gave me an occasional diversion until the end of each broadcast. Even though the recordings may be offensive to "serious" birders, please keep in mind that a golf tournament is not a wildlife documentary. Do you think that there are Native American flutists lurking behind the red rocks when you see films of cliff dwellings? Are there really trumpets blaring out "Fanfare for the Common Man" as you see an Amish farm on television? Get real. Lighten up and be grateful that the network picked a pleasant background sound. If the networks were to display a disclaimer stating that the birdsong is recorded and not necessarily representative of the natural area, would that be acceptable? I, for one, will miss it. To capture real birdsong from actual trees, the sound crew would have to direct microphones at the birds. I doubt that this will be a priority during a golf match.

Maybe, at times, too much knowledge can be a bad thing. I consider myself a serious birder, but I think I have to side with the bemused reporters on this one.

Diana Shaner
Lawrenceville, New Jersey

Your point is an excellent one, which I did discuss with the CBS executive with whom I spoke. In fact, I sent her our contact information in case they choose to continue piping in recorded sounds. We have fine recordings of all possible species, plus knowledge of which ones belong where, so we would be delighted to provide appropriate sounds for golf broadcasts anywhere in the world.

Like you, I'd rather hear bird sounds than not hear them. My point—perhaps understated or misstated in my piece—was that the real news is that so many people now do know what's real versus what's fake when it comes to local natural sounds. Such was not the case 20 to 30 years ago. I did not chastise CBS for dubbing in bird songs, or at least I didn't mean to. I chastised them for not caring which birds represented the place in which they were broadcasting. When you're doing something that millions of people will experience, why not get it right?

Again, thank you very much for your comments.

John W. Fitzpatrick
Louis Agassiz Fuertes Director
Cornell Lab of Ornithology

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

Asian Vulture Catastrophe

For the past three years, two species of Indian vultures have plummeted in numbers, raising fears that the birds may face extinction. The White-rumped Vulture (*Gyps bengalensis*) and the Long-billed Vulture (*Gyps indicus*) had been the most common vultures in the entire Indian subcontinent, but these species have declined by more than 90 percent in several areas where the birds previously flourished.

An unidentified disease is believed to be causing the declines. During the 1996-97 breeding season, Vibhu Prakash of the Bombay Natural History Society noticed numerous dead White-rumped Vultures at India's Keoladeo National Park. Many were found dead under their roosts and some lay dead in their nests.

In 1987, this single park contained 353 nests of this species, but by 1998, the number had dropped to 20 nests. During the most recent breeding season, no nests were found. The number of Long-billed Vultures normally seen at the park also fell precipitously. These cliff-nesting vultures never actually nested at the park because it lacked appropriate nest sites, but the birds were commonly seen there. During a 1986 survey, more than 800 Long-billed Vultures were counted at the park, whereas this past season, only one was seen.

Although these die-offs were first noticed at Keoladeo National Park, the birds appear to be decreasing in numbers across India and Nepal. Researchers at first assumed that the birds must have been poisoned, either by feeding on large animal carcasses that had deliberately been laced with poison or incidentally through environmental contamination. But this was later discounted. The declines were far too widespread and not all of the scavengers present in these areas were being affected. Researchers now believe that a virus—perhaps one that these species had never before been exposed to—may be causing the die-offs.

Birds afflicted with the illness appear to be drowsy or lethargic. They stand with their heads drooped to their feet. Days (or sometimes weeks) later, the birds die, dropping from their perches to litter the ground. Others lie suspended in the branches of trees where they have fallen. The nature of the disease has not yet been determined, but autopsied vultures had whitish deposits (assumed to be crystals of uric acid) on their internal organs, including heart, liver, kidney, and spleen.

In addition to being a catastrophe for the affected vulture species, the disappearance of these birds could also be disastrous for humans, according to Peregrine Fund researcher Rick Watson. "The loss of these important scavengers raises significant issues for human health and economics," he says.

In India, vultures provide a vital service, devouring the carcasses of sacred cattle and other large animals. If vulture populations continue to plummet, these rotting carcasses could present a major public health hazard, harboring and spreading infectious diseases to humans.

The Peregrine Fund (based in Boise, Idaho) is spearheading an international effort to examine the causes of the vulture decline and possible remedies. The group is collaborating with the Bombay Natural History Society of India, the Pakistan Ornithological Society, and Bird Conservation Nepal, working to identify and understand the vulture disease. Peregrine Fund researchers also hope to establish a captive-breeding flock of disease-free vultures in Pakistan to help ensure that these two species will not become extinct. The offspring of these birds could be used in future vulture population recovery efforts.

—*Tim Gallagher*

THE PEREGRINE FUND

Massive die-offs of two vulture species in the Indian subcontinent could lead to the birds' extinction. An unknown disease is believed to be causing the deaths.

Flying Field

AFRICAN DREAMS . . . AND NIGHTMARES

by Mel White

Birding without getting biffed in East Africa

After supper at the lodge, the owner asks his guests about breakfast. I tell him I was planning on getting up early and going for a walk along the road: "I'm a bird watcher, you know, and everything I see is going to be new for me."

"You might want to be a bit careful," he says. "We have some rather large pussycats around here."

Don't you just love that dry English wit? He's talking about lions. And boy, do I feel dumb. We're on the outskirts of Arusha National Park, in northern Tanzania, but somehow this just doesn't look like lion country to me—like savannah, or veldt, or wherever it is that lions hang out in the TV documentaries. It looks like rolling, semiforested farmland . . . not the sort of place where you could end up as somebody else's breakfast. I hadn't even imagined I ought to be concerned.

"A few days ago there was a blood trail where a cat dragged a bushpig across the road in the night," he says. "By, oh, seven-thirty or eight there should be quite a few of the local people out walking, and then you should be all right." What, I wonder, does this mean? That the lions will be scared off by pedestrian traffic? That having more people around simply cuts down the odds of a lion choosing me? That lions prefer Africans to tourists?

"But I still wouldn't go wandering off into the bush," the Englishman says. "A fellow did that a couple of months ago. Flushed up a buffalo and got biffed."

"Biffed" is what I think he said. I don't know what it means, but I assume it's not good. I've seen several buffalo in the past few days, and they appear to have no sense of humor at all.

Next morning, I hang around the lodge grounds for a while, which, birdwise, is no great hardship. Black Sawwings (somewhat oddly shaped swallows) are zooming over the lawn, and White-headed Barbet, Dideric Cuckoo, Yellow-breasted Apalis, Broad-ringed White-eye, and Red-throated Tit show themselves within sprinting distance of the front door, should a fast escape be necessary. After a while, a local village man walks past, pushing a wheelbarrow. If he can do it I can do it, I think, and I set out up the road toward the park.

I have absolutely no idea, walking along with my adrenaline level slowly rising, whether I'm being a fool or a worrywart. Birds soon distract me from the question, though. As I'd imagined, just about everything I see is new. A Black-shouldered Kite isn't different enough from our White-tailed Kite to be exciting, but a distant Augur Buzzard (the local version of Red-tailed Hawk) is attractive in black, white, and rust. A Spot-flanked Barbet and a White-fronted Bee-eater tempt me to keep going, and a Red-winged Starling, glossy violet and the size of a Blue Jay, is among my rewards.

I'm sure I could keep walking all day and see a new bird every three minutes, at least until I got biffed, but I'm due to check out after breakfast. I turn around at the national park entrance and, back at the lodge grounds, come upon a picturesque sight: nine giraffes grazing on acacia trees, arrayed between me and the front door. Once again the scope of my ignorance is disturbingly apparent. Are giraffes dangerous? I have no idea. If I walk toward them, will they ignore me, or run away, or will they charge and stomp me into another blood trail on the dusty road? It's an odd sensation . . . but I've had many odd sensations already in Africa.

I'd arrived at Nairobi, Kenya, a few days earlier on a late-night flight from Paris. I took a taxi to the Safari Park Hotel, a spiffy place set on 34 acres on Thika Road, well away from the city center. (I quickly interject that I wasn't paying for this indulgence myself; I was in Africa on a magazine assignment.) The next morning I woke to calls that seemed crowlike, and turned out, when I left my room, to be from Pied Crows, the common corvid of southern Kenya, and the first of a rush of new species. The trees and gardens around the hotel were full of birds, and I was happy to skip breakfast to admire lifers from Olive Thrush (the counterpart of American Robin) to such gee-whiz species as African Paradise-Flycatcher, with its long, ribbonlike tail, and the iridescent Amethyst Sunbird, one of a family of nectar-feeding beauties that occupy the ecological niche filled in the Western Hemisphere by hummingbirds. The biggest thrill, though, was a Hamerkop, the odd "hammer-headed" wading bird that composes its own family between the herons and storks. Not only was this one boldly walking across the hotel lawn, it was building its huge nest in a tree near the dining room. I also came across a security guard, sharply if incongruously dressed in navy blazer and tie. In the shadow of the high wall around the grounds we had a pleasant conversation about some of the birds I'd seen. He was carrying a pump-action shotgun, the better to protect the haves lounging around the pool—or carrying thousand-dollar binoculars—from the have-nots of the crowded and violent city nicknamed "Nairobbery," just outside the gate.

The magazine photographer arrived in time for lunch, and soon after we climbed into a Nissan van and headed south toward Amboseli National Park, on the Tanzanian border. Our driver, Michael, was a friendly and sharp-eyed fellow, but I soon realized he didn't grasp the concept of birding. It was one thing for me to call "Stop!" when we passed a group of Marabou Storks on the outskirts of a small village or an Ostrich running across open country (in this dry season each footstep left a little puff of dust hanging in the air, just like in a cartoon). It was something else for him to wait for me to flip through the field guide to try to identify some odd thing in a roadside tree—say, a White-bellied Go-away-bird or an Eastern Chanting-Goshawk. The smaller the bird, the less time Michael was willing to wait. He might give me 15 seconds for a Black-bellied Bustard, the size of our Wild Turkey, but a Fischer's Sparrow-Lark got a rolling stop, at best, unless I practically pulled his hand away from the gear shift. He was used to showing people elephant, buffalo, leopard, impala, and zebra. The idea of parking the van so I could puzzle out my first Blacksmith Plover or Crowned Lapwing seemed to him not only incomprehensible but almost distasteful.

"Are giraffes dangerous? I have no idea. If I walk toward them, will they ignore me, or run away, or will they charge and stomp me into another blood trail on the dusty road?"

FRANS LANTING/MINDEN PICTURES

Eventually his impatience wore me down, and after we arrived at Amboseli I gave up trying to get him to stop for little dickybirds beside the road. When a Eurasian Hoopoe, a bird I'd dreamed of seeing for years, landed nearby, I could happily have watched it indefinitely, but I let Michael drive away after just a few seconds. If it had been just me I would have been more insistent, but we were really here so the photographer could find scenics and wildlife shots. We were, after all, supposed to be working.

Adding to the frustration was the fact that no one is allowed out of a vehicle in the national park. We passed clumps of woodland or marshy spots that I knew must be home to dozens of species, yet I couldn't get out and walk around for even a few minutes. I felt a little less bad about this after I saw a pack of spotted hyenas chase down a blue wildebeest and literally rip the still-living animal limb from limb in a matter of seconds. If you ever make a list of ways not to die, put this very near the top.

So I birded from the van window and around the not-very-expansive grounds of the park's Serena Lodge. I stood at the fence and gazed out to woods and grasslands and wetlands, and I thought about the birds hiding just out of my sight—and of bloody hyena jaws. Even with the limitations, I still saw lots of good stuff: Lilac-breasted Roller, White-headed Buffalo-Weaver, Malachite Kingfisher, Beautiful (yes!) Sunbird, the weirdly short-tailed eagle called Bateleur, Little Bee-eater, White-browed Coucal, and Saddle-billed Stork, to name only a few of the most striking. The array of starlings was especially pleasing, after a lifetime of knowing mostly the unwelcomely introduced *Sturnus vulgaris* in the New World. The Superb Starling earned its name with blue-green and chestnut plumage; Hildebrandt's Starling was similarly colored but even more superb. Violet-backed Starlings flitted through tall trees above the lodge swimming pool, their color contrasting with the plain gray of Wattled Starlings, which this time of year lacked the fleshy facial growths that give them their name. The latter associated with zebra herds as our cowbirds follow cattle, looking for insects flushed up from the grass. The strangest member of the starling family I saw was the Yellow-billed Oxpecker, which perches on large mammals such as buffalo, giraffe, elephant, and eland, gleaning ticks and insects and even picking bits of the animal's flesh from sores and wounds.

In truth, there was something beyond restraints on birding that dominated my thoughts at Amboseli. At dawn I would walk outside and look to the band of clouds that formed each morning over the plains and to the single misshapen cloud set high above the others, a cloud that was no cloud at all but the icefields of Kilimanjaro. That mountain, at 19,340 feet the highest in Africa, was the true goal of this trip. My editors had gambled a fair amount of money that in six days I would be standing on the top, and I had no idea whether I would be among the 40 percent of those who attempt the climb who make it. To say that it weighed upon my mind would be akin to calling a lion a pussycat.

We crossed the border into Tanzania, and after a night at the lodge near Arusha we started up the mountain. The ascent, as I had read, involved no technical climbing at all: simply a long, long trudge, challenging only in its elevation gain and the attendant danger of altitude sickness. We passed through dense forest where black-and-white colobus monkeys and green-and-purple Hartlaub's Turacos looked down on us, into dry scrub where sunbirds provided the only color, and higher to a barren rocky landscape where only sparse grass and an odd, buffy-orange lichen grew, and the only birds were White-necked Ravens and the friendly little Moorland Chats that hopped around our tents.

On our fourth night, we camped at 14,000 feet in terrain that reminded me of the Pathfinder photographs of the surface of Mars. I had given up the idea of seeing any new birds, indeed any animate nonhuman thing, until we reached treeline on our descent. In the last light of day I wandered away from camp and lay down on a boulder, intent on doing nothing but watching the clouds swirl—an activity that, up here, was more entertaining than it might sound. But as I gazed at the sky a huge dark shape appeared over a ridgetop, sailing toward me on motionless wings. It took a few seconds to switch back to wildlife mode, and then I realized with a rush of excitement that it was a Lammergeier, the legendary "bearded vulture" of the Old World's wildest mountainous places, scarce and threatened nearly everywhere it still exists.

In the clear air of this elevation I could see this magnificent bird in detail: its long, wedge-shaped tail, its tan body, even the small "beard" of stiff feathers at the base of its bill as its passed overhead. In Lars Jonsson's European field guide he puts aside quantitative description of the Lammergeier to state, "The sight of it is majestic and often overwhelming." That's a bit of unscientific opinion that I would have seconded at that moment, had I not been overwhelmed.

Three mornings later I stood on Uhuru Peak, the highest point on the ancient volcanic rim. It was an accomplishment, I suppose, but one that was more testament to a fortuitous lack of susceptibility to altitude sickness than to any skill or strength. I was full of happiness and relief, and the world beneath me was breathtaking—but even as we began our descent, I knew I was no mountaineer. I couldn't help thinking, blasphemous as it might seem on that famed summit, that if I'd spent the past few days in lowland forests and wetlands I could have seen lots of things more interesting than rock and ice and sky. I'd been to the top of Kilimanjaro, but the high point of my African adventure had come when a vision appeared out of the clouds and fulfilled a birder's, not a climber's, dream. ■

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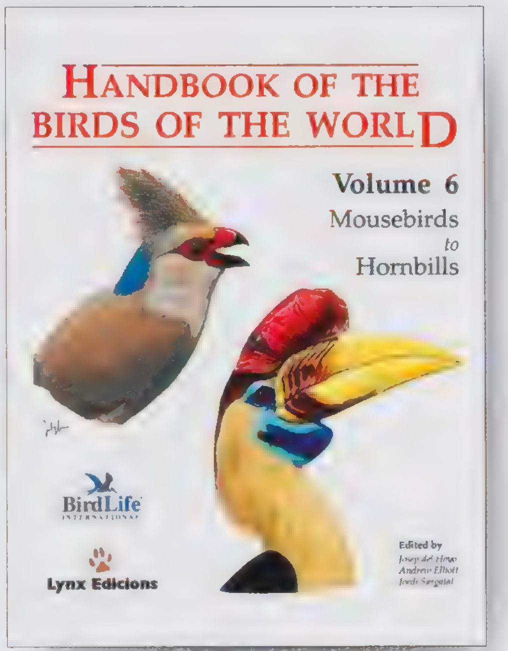

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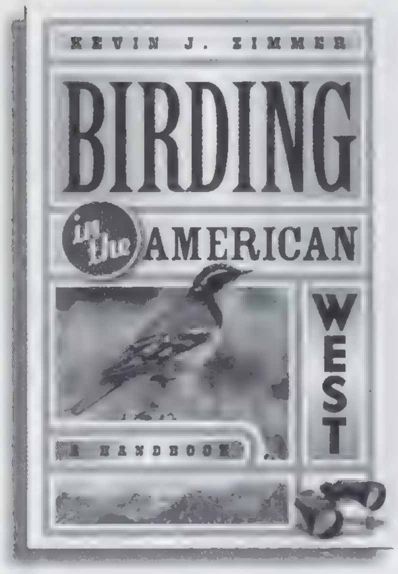
Kevin J. Zimmer



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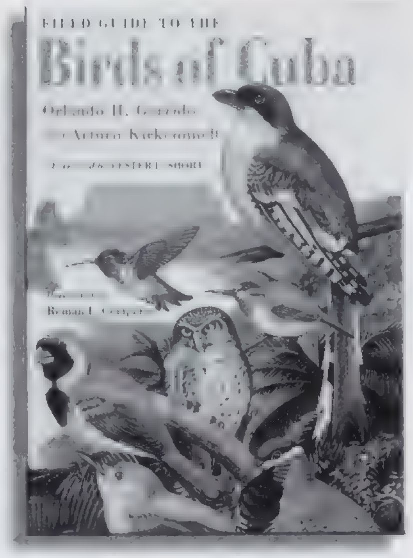

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NIGHTJAR QUEST

TEXT AND PHOTOGRAPHS BY WILLIAM BURT

A photographic journey in search of nightjars

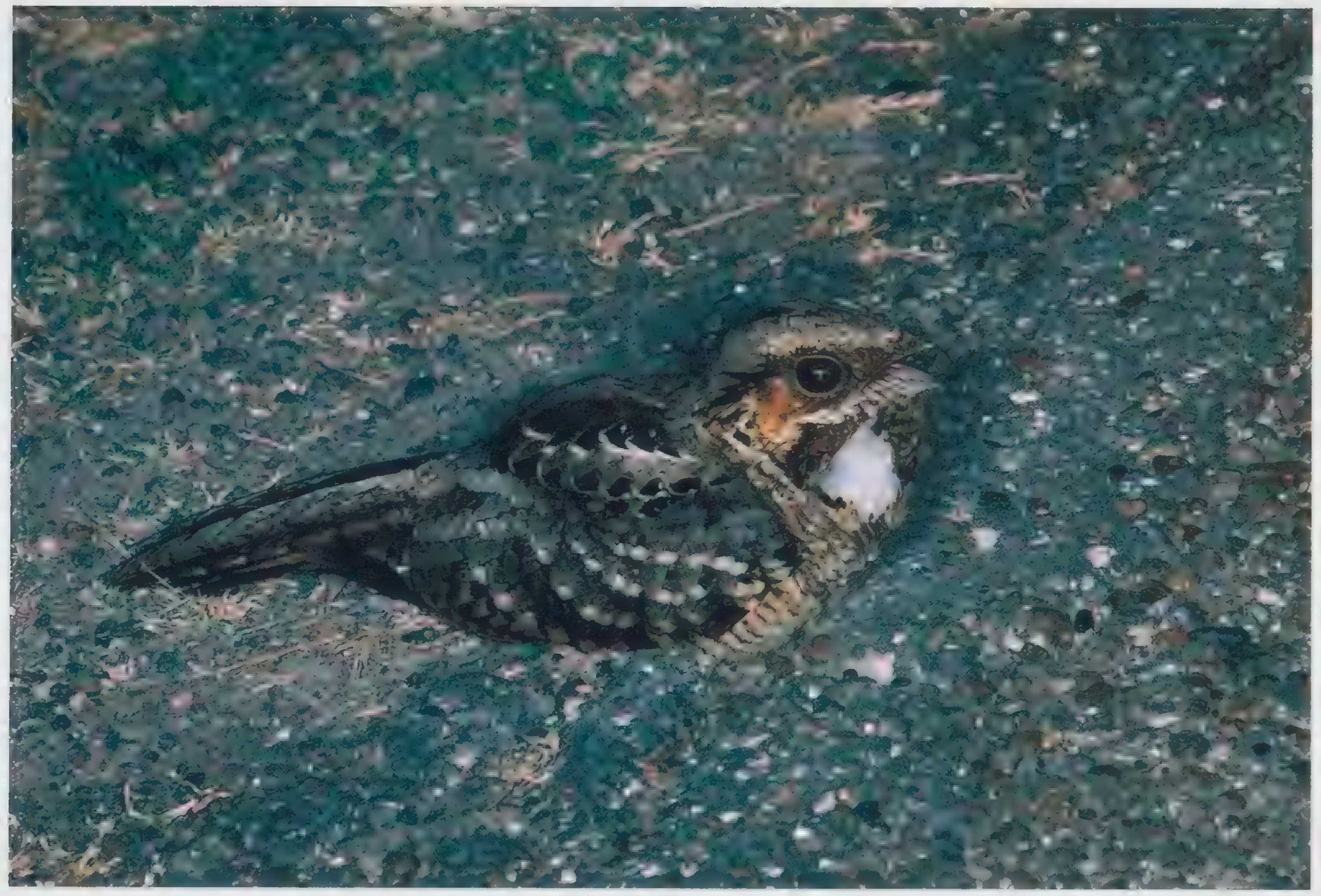
One sparkling clear April morning I explored the roads and trails of Santa Ana National Wildlife Refuge in South Texas, in search of shady, secluded areas away from noise and people. And I found one, a little fairyland woods of old trees and Spanish moss and leaf litter so crisp and dry it seemed mummified, incapable of decay. Leaves crackled underfoot, twigs snapped, vines twirled upward to the trees, and the Spanish moss hung so low it spilled on the ground, where it lay in loose piles. The air was still, supremely still, and quiet, except for the cooing of a Mourning Dove—until a band of Green Jays moved through, cavorting and making noisy jay-notes.

It is here, in just such secret places, in the sun-spotted gloom, that Common Pauraques spend their days asleep. When disturbed they materialize suddenly, flying up from the litter with scarcely a sound, just a pulsing of air, before gliding off into the shade and disappearing. I roused several that morning, and they looked like big brown moths with white windows inside their wings. But I needed more than glimpses. I needed photographs.

At dusk, they wake and waft out into open country. In spring, beginning in mid-March, the males take position on lawns, levees, roadsides, even the road itself, and call well into the night. Their eyes glow in car headlights—and here, I knew, lay my best chance for photography: I'd go out late and shine for those eyes.

The pauraque was one of several birds I'd hoped to photograph, all members of a strange nocturnal group called nightjars (for their "night-jarring" calls), also known as "goatsuckers" for the absurd belief once held that these big-mawed

The Chuck-will's-widow (left) and other nightjars fly as silently as owls, vacuuming up airborne insects in the darkness. They do not use echolocation like bats to find their prey but instead rely on their enormous eyes.



creatures actually feed on the milk of goats. But they are strange enough, these eerie moth- and moonlight-loving birds, without the stigma of such superstition. Big-eyed, big-headed, and big-mouthed—big-voiced—they are as swift and silent on the wing as owls, yet like bats they vacuum up moths and a multitude of other airborne insects in flight, finding them not by echolocation but with those big eyes. And most remarkable of all, perhaps, is their protective camouflage, which is without equal in the bird world. By day they sleep secluded in the shade of woods, either lengthwise on some scraggly branch or on the ground in a welter of dead leaves and twigs and shards of bark, so melded with their surroundings that they are all but indiscernible.

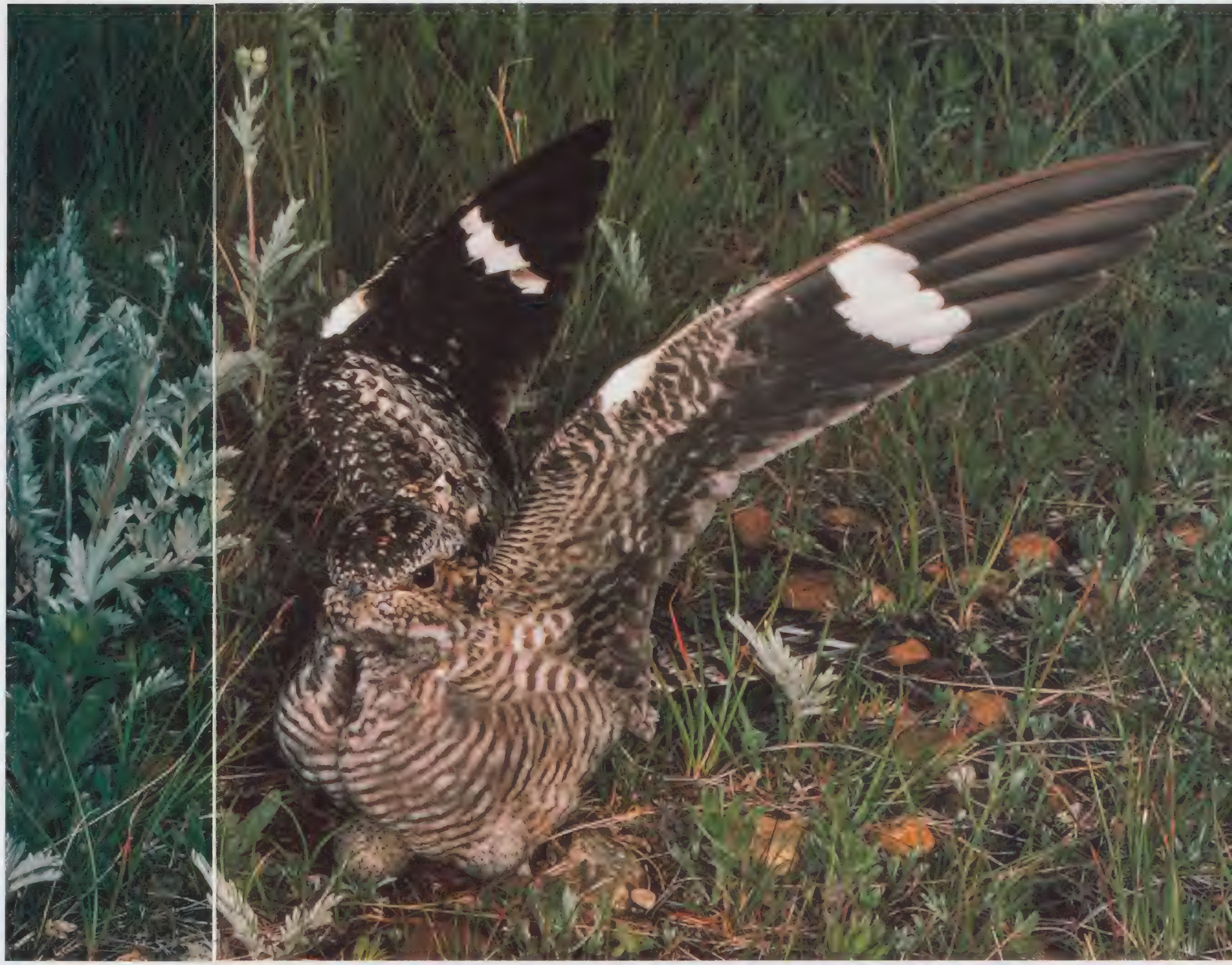
> *I was impressed by this confiding bird, by how handsome he was in my bright light at this close range, with his fine pencilled patterning and long sweeping tail.*

Besides the pauraque, I was after four other nightjars: the jay-size Whip-poor-will, the bigger, browner Chuck-will's-widow, the tiny Common Poorwill, and finally the misnamed Common Nighthawk—not a hawk at all, of course, or even especially partial to the night (unlike the others). There are two other North American members of the family, both obscure, essentially Mexican species that occur locally in the Southwest—the Buff-collared Nightjar and the Lesser Nighthawk.

The Common Pauraque, nearly as big as a pigeon, occurs primarily from Mexico to western South America, but it does range north to southern Texas, where it inhabits dry, brushy country along the lower Rio Grande—notably, at Santa Ana Refuge. I spent three nights in that no-man's-land beyond the refuge gates and never saw a soul. There were other eerie stimuli, however: scudding clouds and an elusive moon; the rubbery drumming songs of toads or frogs; armadillos blundering out from the brush; and sphinx moths buzzing in my light like hummingbirds. And the pauraques, too. Their calls were hoarse, heavy whistles that trailed away mournfully: *Pweeeeeeeeew! Pweeeeeeeeew!* And their eyes were stranger still, phosphorescing orange-reds and sometimes yellow-greens that ignited in the dark like live rubies when my light beam touched them.

Most of the nightjars exhibit this intense eye shine, thanks to a structure called the *tapetum lucidum*, a pigmented mirrorlike layer that improves night vision by reflecting light back through the retina. Other night creatures have it—deer and bobcats and some spiders, for example, and some other birds—but no eyes I'd ever seen were so intensely igneous as these.

Author William Burt spent three eerie nights searching for Common Pauraques at Santa Ana Refuge in Texas before finding the bird at left, above, which allowed him to approach within 10 feet.



On one long stretch of road, along a levee flanking a canal, I could scout ahead with binoculars and see those rubies up to half a mile away in the headlight beams, lined up like lights along an airport runway.

I stalked them with light and camera, doggedly, painstakingly, and from every angle, but these birds were just too shy. Invariably they would spook at 20 feet or so, fly out around me over the canal, and land a few hundred feet up or down the levee. Night after night I stalked them, hour after hour, but it was no use. Finally, on my last night at the refuge, I found a different individual. He allowed me to approach within 10 feet, and once I even photographed him calling, with bill ajar and a bright white band exposed on his expanded throat—a badge displayed by males of many kinds of nightjars when they call. I was impressed by this confiding bird, by how handsome he was in my bright light at this close range, with his fine pencilled patterning and

The Common Nighthawk (above) is the only nightjar that is active in daylight. It is a familiar sight in the early evening sky, with its distinctive chevron wings and stiff rowing flight.

BHL

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long sweeping tail, and by how negligible his bill was, so miniscule I could scarcely find it. And his legs and feet were little more than stands to help him sit upright.

Strange birds, these phantoms with the glowing eyes and the big voices—so *loud*, and yet so warily elusive. Would the others be this difficult?

I'd had one earlier encounter with a nightjar in Saskatchewan, the year before, and that one had been anything but difficult. I was in the Cypress Hills, walking on a high cobbled ridge, when at my feet there came a sudden catlike hiss—and there, with wings held up in stiff, statuesque defiance, sat a live Common Nighthawk on her eggs. I stood transfixed, not quite believing what I was seeing, then stepped back slowly and strode resolutely downhill to the car, returning in 10 minutes with my flash-and-camera outfit. She was still there.

So melded was she, so lost in the surrounding chaos of dead leaves and sticks and sun and shade, that Roger had to give detailed directions explicitly and repeatedly before I found her, too.

How different this was from all that striving with the Pauraques. And how different is the bird itself. This, the "aberrant nightjar" as Roger Tory Peterson neatly cataloged it, is the only one that is active before dark. Indeed, the nighthawk profile is a familiar one in the early evening sky, with its unmistakable chevron wings and stiff rowing flight.

The Common Nighthawk is aberrant in other ways. Unlike other nightjars it enjoys a variety of habitats, living almost anywhere so long as there is bare open ground for nesting sites. And "ground" in this case includes the flat gravel roofs of urban areas, on which it often lays its eggs. This bird is as happy in downtown Boston, Cleveland, or Chicago as it is in the Carolina pine savannas or the remote hills of southern Saskatchewan. It is unique also for its courtship flights, steep power dives that end in a fierce humming of the braking wings known as "booming." And its call is different: a shrill nasal *beer, beer* made on the wing, not anything like the well-enunciated phrases of most other nightjars.

Undoubtedly, the best known of our nightjars is the Whip-poor-will. The name at least is known to most people, and the call itself is also well known to many—tiresomely so in many cases, because it is repeated endlessly, machine-like, sometimes hundreds of times with hardly a pause between. Naturalist and writer John Burroughs once counted "1,088 blows with only a rarely perceptible pause here and there, as if to take a breath."

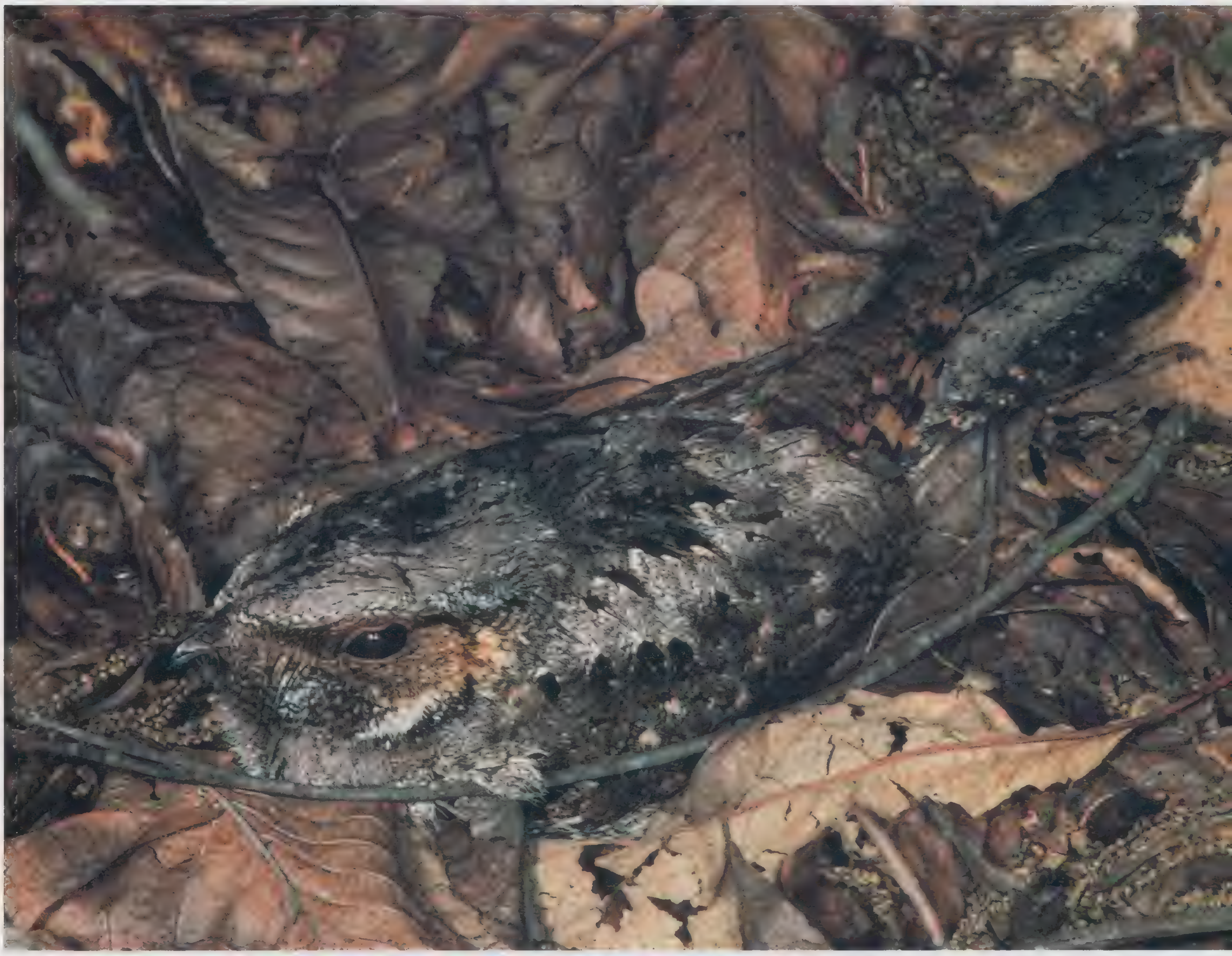
The Whip-poor-will's bigger, browner, more southern relative, the Chuck-will's-widow, has a call that is almost as monotonous as the whip's, and even louder. In spite of a wholesale face-lifting of its original forest home, the "chuck" still thrives widely in the South. Development, lumbering of old-growth forests, conversion en masse of native woodlands to sprawling pine plantations, or "pulp farms"—none of it seems to have discouraged the resilient Chuck-will's-widow. Stop almost anywhere in the pine-forested Southeast at dusk in spring or summer, listen, and chances are you'll hear its enthusiastic call. You'll probably hear two or three or even more, if acoustics allow.

I tried for hours and hours, night after night, to spot the glowing eyes of Chuck-will's-widows and Whip-poor-wills in North Carolina, in woods where each of the two were calling. It augured well, at first; just off the roadside were green twinklings, the pinpoint eyes of spiders. Then down the road came two green slits and the form of some sleek animal, maybe a bobcat, but it slinked off when I put a brighter beam on it. But in the woods itself, I had only trouble. For one thing, it was seldom level, and there was much obstructing understory, blueberry and shrubby oaks and poison ivy, vines, and fallen branches, all of which made both the going and the shining difficult.

It was not a pleasant thing to do, canvassing those southern woods at night. It was hot, and there were mosquitoes. And there was a definite unease as well, a spookiness and sense of danger. There were shadows cast by the light; there were hallucinations. Strange shapes loomed up before me, shrank and disappeared; giants rose up in the trees, sleek panthers came and went, as well as spirits of the dead, and these visages changed constantly as I forged on through. They rose and fell and stretched fantastically and instantly, then disappeared or transformed into some other instant horror.

There were reasonable things to fear, as well: old wells, cellar holes, snakes, skunks. What I *wanted* to find, some beaming answer to my light, I found only once—and then it was only a shard from a broken bottle.

The whip and the chuck are not uncommon birds, but I just could not get close enough to either, try as I may. At length, it became clear: I'd simply have to find their nests. So I searched some more, alone and with the help of a few stalwart volunteers; but we found nothing. Then I learned about two men from Kansas, Roger Boyd and Calvin Cink, both biology professors at Baker University in Baldwin City.



The namesake call of the Whip-poor-will is well known to many people in the East. It is often repeated dozens or even hundreds of times with barely a pause in between. But this secretive, well-camouflaged bird is difficult to see, even if you know the location of a nest (above).

My first contact was with Roger, an affable man not only eager to help but actually optimistic about our prospects. But it would be his colleague Cal, he said, on whom our success would depend: he was a nightjar maven unlike any other.

Calvin Cink is a man you might describe as reticent, but with a little prying it was obvious that he knew more than anyone about these arcane birds. He'd studied them for 17 successive seasons and had learned not only their complete vocal repertoire, including the various flight notes and even peepings of the young, but certain aspects of their life histories never known before—how long the young stay at the nesting site, and how long they are under parental care and with which parent—things a person could only learn by knowing their secret nesting sites and watching from a blind. And he had, indeed, found many nests, about 10 Whip-poor-will and four Chuck-will's-widow nests per year on average. One year, in a determined effort, he'd found 16 nests of the Whip-poor-will alone—16, in just one season! In all my other inquiries I'd failed to come across anyone who had found even one, except by blundering upon it—except for Roger Boyd, who had found a few.

One day I was searching a ridge for nests with Cal, when he suddenly turned his head sharply to an angle and froze: "Hear that?" Among the usual jumble of woodland bird sounds, just barely audible, was a weak, pewling whistle: *wheew, wheew.* My only response was what must have been the look of blankest incomprehension.

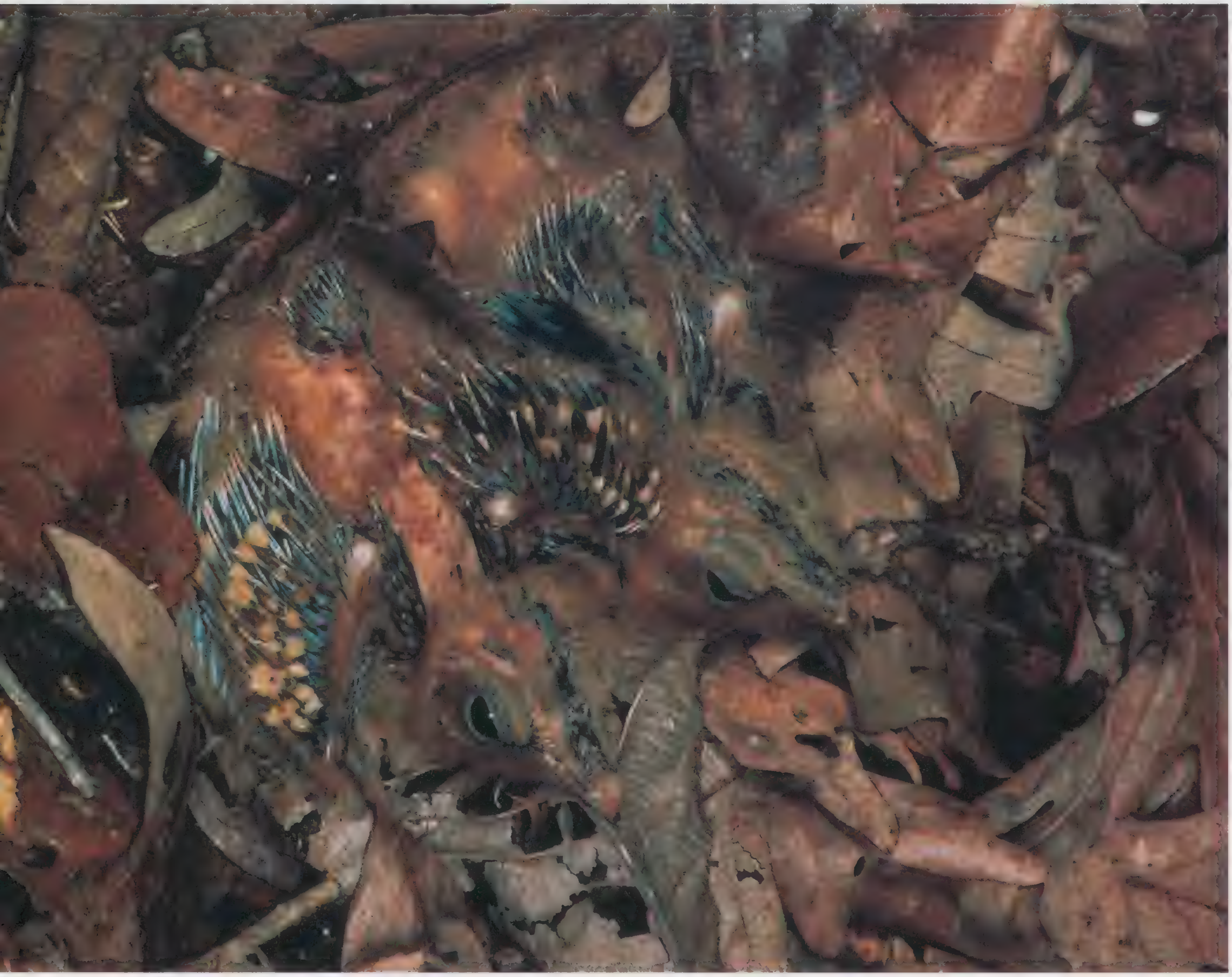
"It's a young one," he said, "a Whip-poor-will or a chuck." With his head still canted, he began homing in, while I discreetly followed. Then a bird flew up, a big brown moth-bird—it was a mother Chuck-will's Widow, and she circled widely, uttering an impassive *wok, wok,* then alighted high on a branch 10 yards away. Meanwhile Cal, undistracted, had made his way directly to the base of a black oak and was bent over examining the leaf litter.

"There," he said at last, pointing to a place of absolutely no apparent consequence, only four feet away. Then I saw them, or deciphered them, rather, two dead-leaf-colored youngsters. They were about six days old, and they were the single most amazing case of feathered camouflage I'd ever seen. It took both squinting of the eyes and the imagination to make them out among the leaves. The mother obviously would not cooperate for photographs, so I contented myself with pictures of the young ones—plump and expressionless, huddled together like two woolly toads.

The following year, Roger took me out again in those sultry woods near Baldwin City, this time to a Whip-poor-will's nest with eggs that Cal had found two days earlier. Again, it was a lesson in nightjar camouflage. For minutes, Roger stood still and scanned with binoculars, intently, before he finally saw the sitting mother bird. So melded was she, so lost in the surrounding chaos of dead leaves and sticks and sun and shade, that he had to give detailed directions explicitly and repeatedly before finally I found her too. Then whenever I took my eye off her, even momentarily, he had to redirect me.

At last, I had my Whip-poor-will, but still no Chuck-will's-widow, except for those hunkered young ones. I knew that I'd need to try another year. And I'd need to try another place: the sandy pinelands of the South, perhaps, where there would be many more chucks and much better odds.

The following spring, I set out for South Carolina, where I'd spend a week at the National Audubon Society's Silver Bluff Plantation Sanctuary, thanks to the hospitality of sanctuary warden Paul Koehler and manager Dan Connelly. Both men had come upon their



Now you see them, now you don't. Two young Chuck-will's-widow chicks, barely six days old, are a perfect match for the leaf litter at the nest. Says author Burt, "It took both squinting of the eyes and the imagination to make them out among the leaves."

share of nests over the years. Paul had found about one nest a year, usually when he was out walking the prescribed route of an annual breeding bird census.

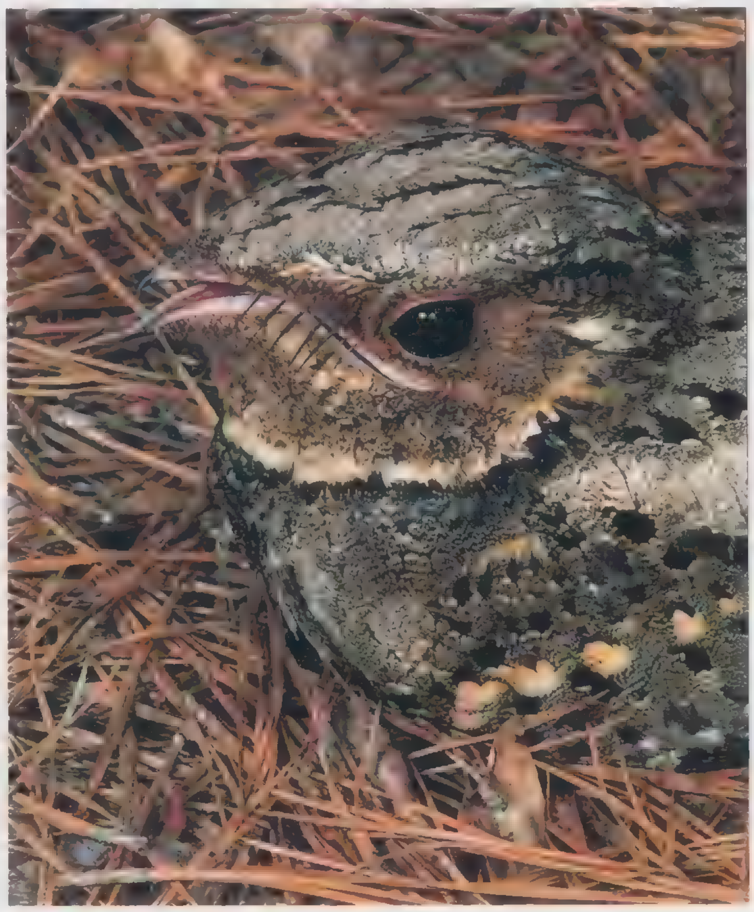
But could a person find one if he *wanted* to? I'd been out searching for several hours that first hot day, autopiloting through the endless sameness of the pine woods, scanning the duff, when miraculously I found myself staring at a squint-eyed Chuck-will's widow, sitting big and resolute—obviously, an incubating female. Four more nests would follow in the ensuing days, but these would all belong to shyer birds. It is to that mummylike brave bird at that first nest that I owe my pictures.

To me, the most intriguing of the nightjars had always been the junior member of the group, hardly bigger than a thrush: the Common Poorwill. This bird is *the* essential western nightjar, resident of badlands, canyons, dry hills, and high plains from Kansas westward, and from Mexico north to southern Canada. The call, like the bird itself, is an abbreviation, comprising just the two denoted syllables of its name, though at close range a negligible third one is perceptible (inspiring one old-time ornithologist to describe the call as "poor-wil-*bur*").

The Common Poorwill is unique among the nightjars, and virtually all other birds, in a most amazing way. It hibernates. Or to be precise it enters a short-term kind of hibernation called "daily torpor" in which its metabolism slows and all activity comes to a standstill. According to Canadian researcher Mark Brigham, who has studied this species, the Common Poorwill's temperature can fall as low as 5° C, a drop of more than 35° C. The phenomenon was first carefully observed in December 1946, in the Colorado desert, by Professor Edmund Jaeger and two students, who to their amazement found a poorwill sitting mummylike in a small hollow "crypt" in a canyon wall. They picked it up, turned it about, stroked its back, and even shouted at it. The bird's only response was to open and close one eye. Ten days later they returned to find it in the same spot, still asleep.

Since then, torpid Common Poorwills have been found in other situations: ensconced in rotting wood in the Sierra foothills and even once sitting on a porch in San Bernardino, California, during a Christmas Bird Count. Actually, the first Common Poorwill ever described—collected by Meriwether Lewis in North Dakota in October 1804 during his epic journey with William Clark and the Corps of Discovery—may well have been a torpid bird. The "mercury was at 30 a.o. the bird could hardly move" noted Lewis in his journal, adding with uncanny perspicacity that it "appeared to be passing into the dormant stage." Whether a Common Poorwill can sustain this condition for long periods in the manner of some mammals is not yet known.

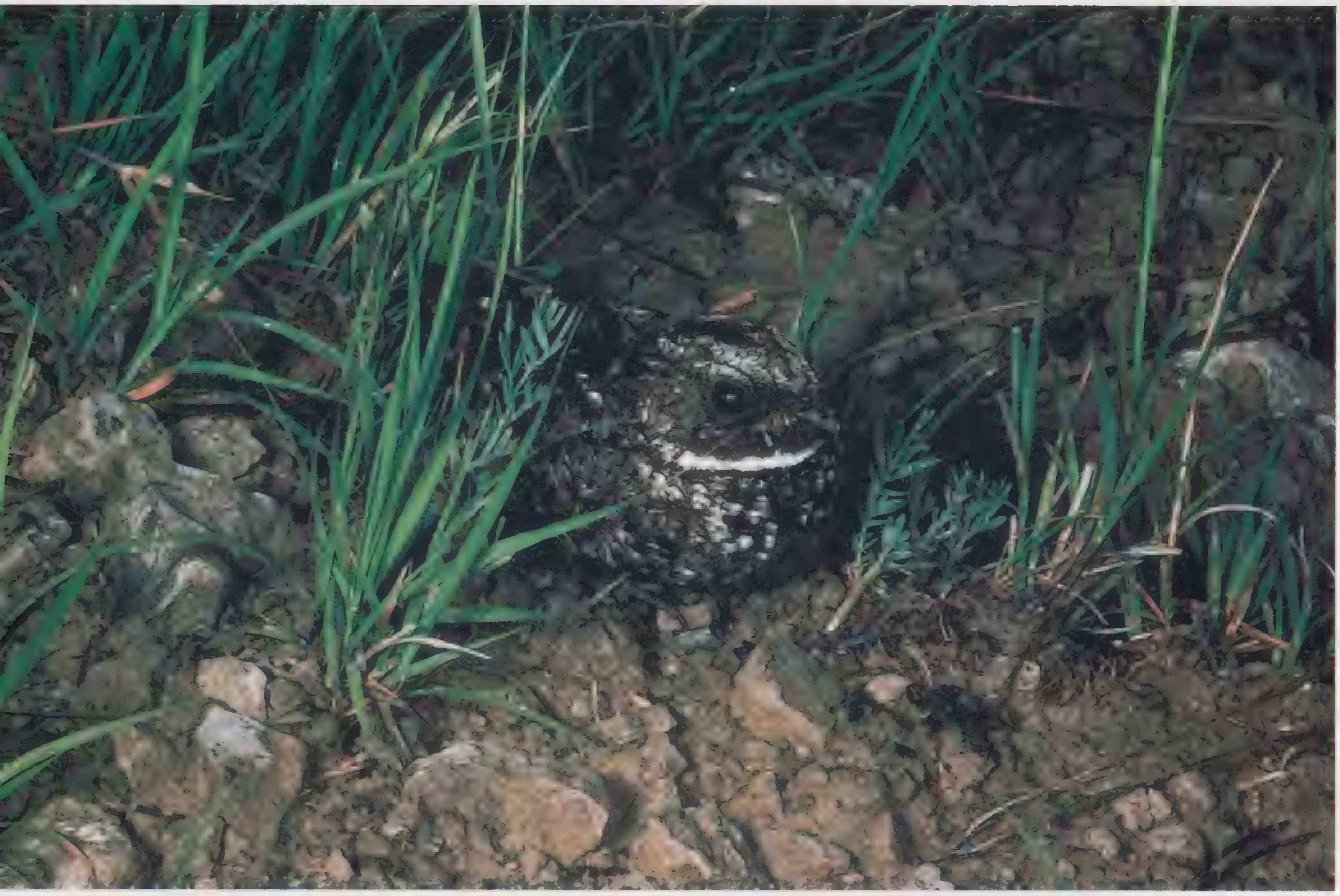
The first time I ever heard a Common Poorwill was at the northern terminus of its range, in the lovely Cypress Hills of southwestern Saskatchewan. High on their smooth, grass-tinged slopes stand silver bands of aspen, and higher still dark zones of lodgepole pine; on their summits lie broad swaths of prairie plateau. So they are anomalous in the region and serve as an outpost for a number of plants and animals—like the Common Poorwill—found nowhere else in Saskatchewan. It was the middle of July, just after nightfall. I'd stopped on a steep dirt road, below a lofty summit. A yellow moon had emerged, round, above the tops of pines; it was cool, almost cold, strangely so for the season, and except for the swish of the breezes, which rose and fell periodically, almost rhythmically, it was still as winter.



After searching for hours, scanning the duff in a South Carolina pine woods, Burt found himself staring eye-to-eye with an incubating female Chuck-will's-widow (at left). Though he found several more nests of this species in the ensuing days, this very cooperative bird was one of the few adults he was able to photograph.

Then, during one of the lulls, things started to happen. A nighthawk began calling overhead, and coyotes wailed like sirens in the distance. Then I heard it, soft but clear, a single poorwill. I'd thought it would be mechanical, perfunctory, a half-hearted *Whip-poor-will,* perhaps, without the *whip*—but no, this call was gentle, musical, and mellow, as unlike the callous shouts of its big relatives as it could be. It was a soulful voice, melancholy and haunting.

But I got to know the Common Poorwill better in the Pine Ridge region of northwest-



The Common Poorwill (above) is unique among nightjars and most other birds in that it goes into a kind of short-term hibernation called "daily torpor." During this torpor, the bird's metabolism slows, all activity stops, and its temperature drops by sometimes more than 35° C.

ern Nebraska, a coarser, more arid and eroded country than anywhere in smooth Saskatchewan. I drove about surveying canyons one day, looking for a place to work after dark. Some were forbidding—fenced off with barbed wire and posted with proprietary signs. But I found another, friendly little canyon, still innocent and undisturbed. I came back at dusk, stepped out of the car, and promptly heard a poorwill.

I'd heard others near Chadron the night before and tried the usual routines—playing tapes, stalking with a light—without success. Seldom could I even find one with my light, they were so wary. This one, though, was as accommodating as a genie. He flew in promptly when I played the tape, hovered in the light red-eyed, and landed. He sat still as a stone while I walked up within six feet. But why? Why was this one so different? Was it a matter of his personality or just propitious timing with respect to his mating cycle?

In any case, he sat there for a picture, and when I was fiddling with lens settings, a second genie wafted in and landed by the first, a ghostlike double—a female? At this, the male flew up, hovered by my face, and fanned my left ear gently with his wings. Perhaps I had happened on this male at the time of most ardent courting.

So I had my photographs, all of them, at last. But what a trial these birds had put me through. You could not invent a more frustrating subject: so loud and substantial to the ear and yet so ethereal to the eye. But then I'd found this one substantial poorwill, in the Nebraska hills.

It was a beautiful night there in that little canyon. The stillness, the spicy air, the pointed pines and stars and rising moon, and that mellow call. The atmosphere . . . and the bird himself, so close, he was endearing, almost comical with the big-eyed, big-headed look and petite body—yet self-possessed and fearless. Fearless, yes. After all, he'd nearly drubbed me with those little wings, this Lilliputian member of the group; he'd proved more mettlesome than others nearly twice his size. This one had pluck and personality. He was the reward . . . the one worth waiting for. ■

William Burt is a writer and photographer based in Old Lyme, Connecticut. He is the author of Shadowbirds, *a book about his efforts to photograph all of North America's rails.*

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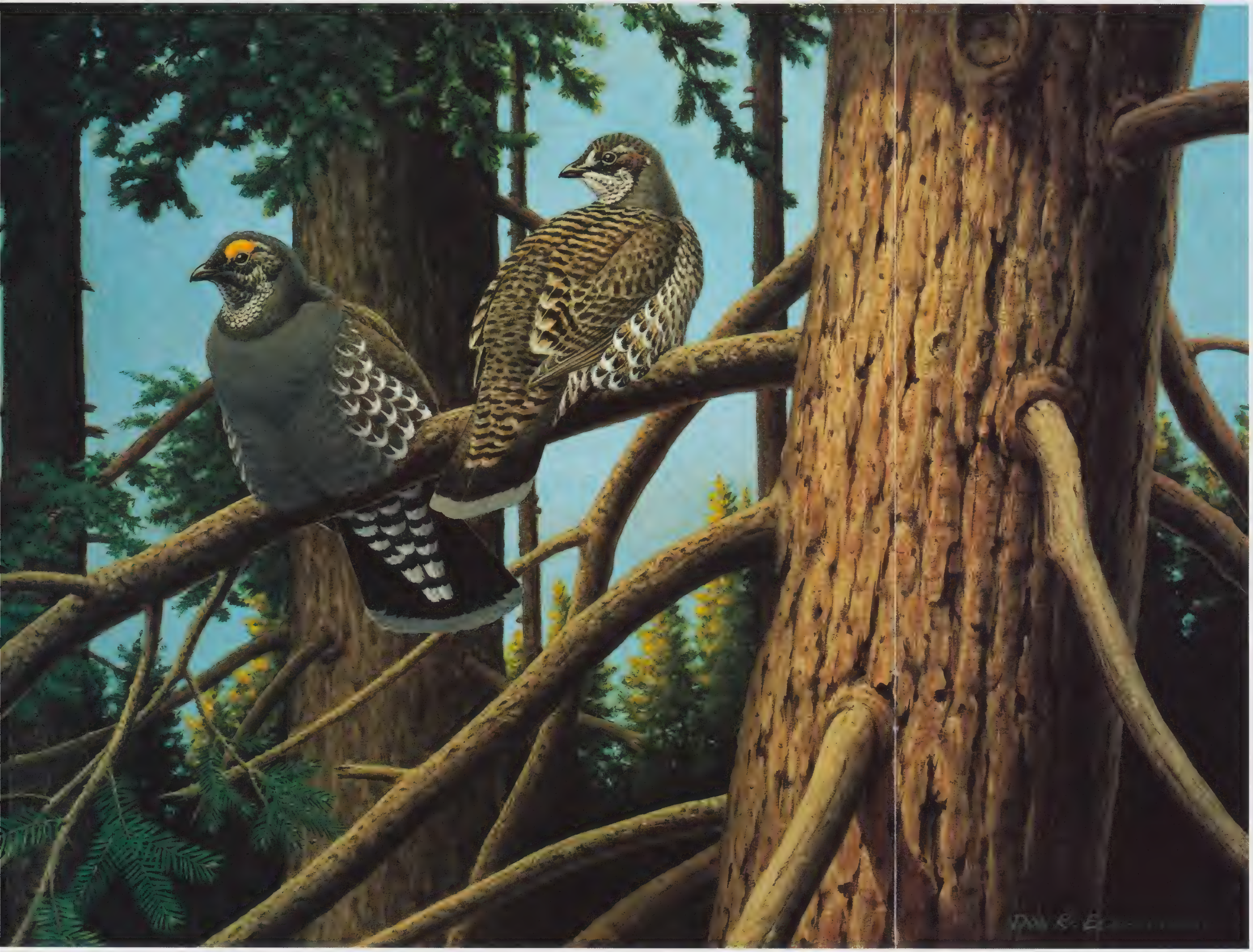
THE HEART OF AN ARTIST



BY TONY ANGELL

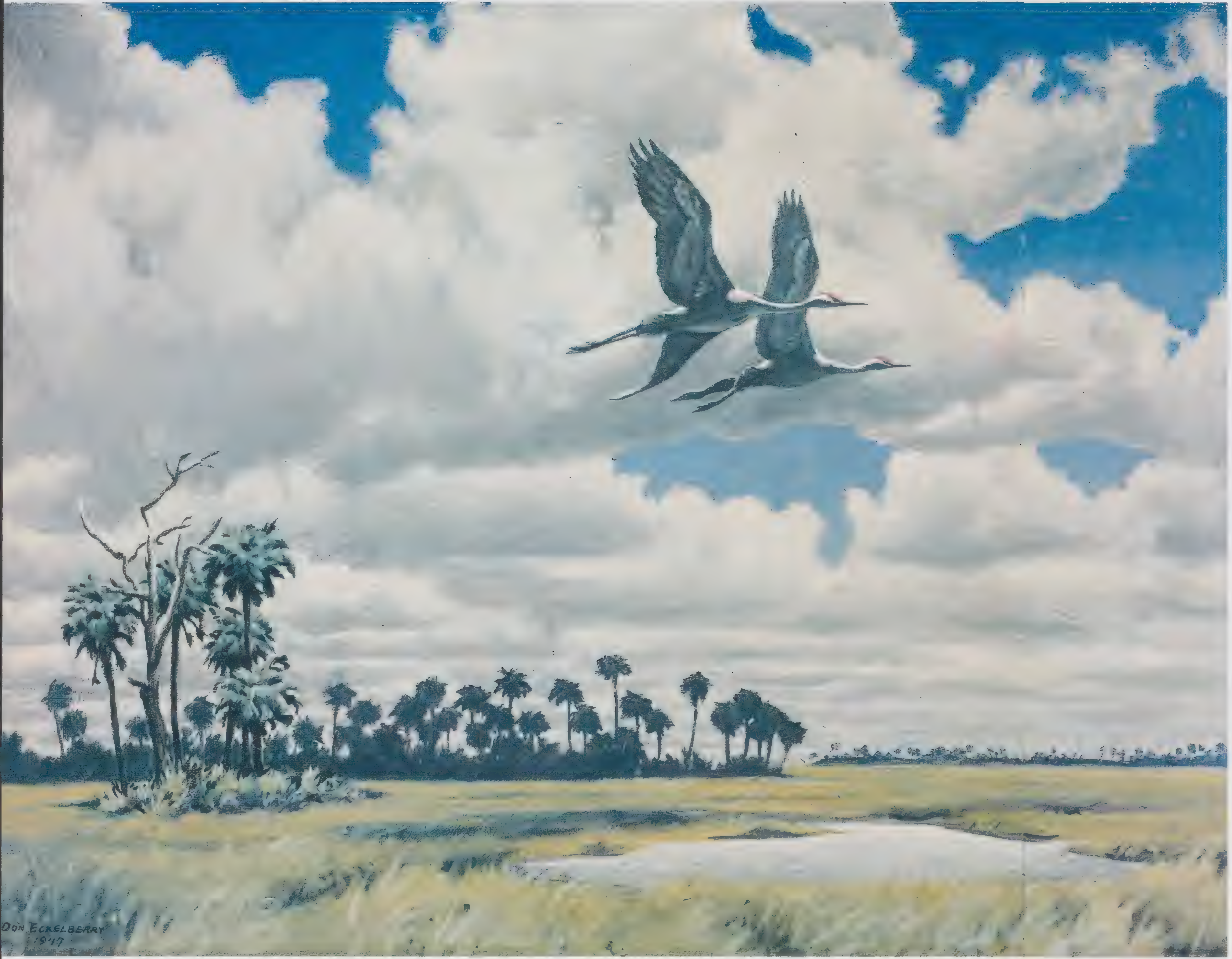
An intimate portrait of legendary bird artist Don Eckelberry

It was a summer evening on Long Island in the mid-1960s, and I stood on a breezy patio listening to steel drum music mix with the swirl of conversation, raucous laughter, intense discussion, and storytelling. I was in the middle of Don and Virginia Eckelberry's annual artists' party, which brought together painters, sculptors, musicians, dancers, and poets to share their passion for birds in particular and everything else in general.

Just out of college and an aspiring bird painter from the Pacific Northwest, I had come with my meager portfolio in hand, unaware that I would be pitched into a cauldron of creative expression the likes of which I had never imagined existed. In short order, I was putting faces to names I had heard of in the field of natural history painting. Roger Tory Peterson, Guy Coheleach, Al Gilbert, Guy Tudor, and Arthur Singer had all brought recent work to be discussed and encouraged, along with mine and the work of others.

Elsewhere in the Eckelberry studio, an artist who had recently returned from an expedition to Costa Rica shared his drawings, field paintings, and photographs of tropical birds. Simultaneously, in a patio corner, a discussion was underway comparing the impressionistic techniques of Monet and Degas with those of the animal painters Bruno Liljefors and Carl Rungius. Now and again someone expressed grave concerns over the country's building com-

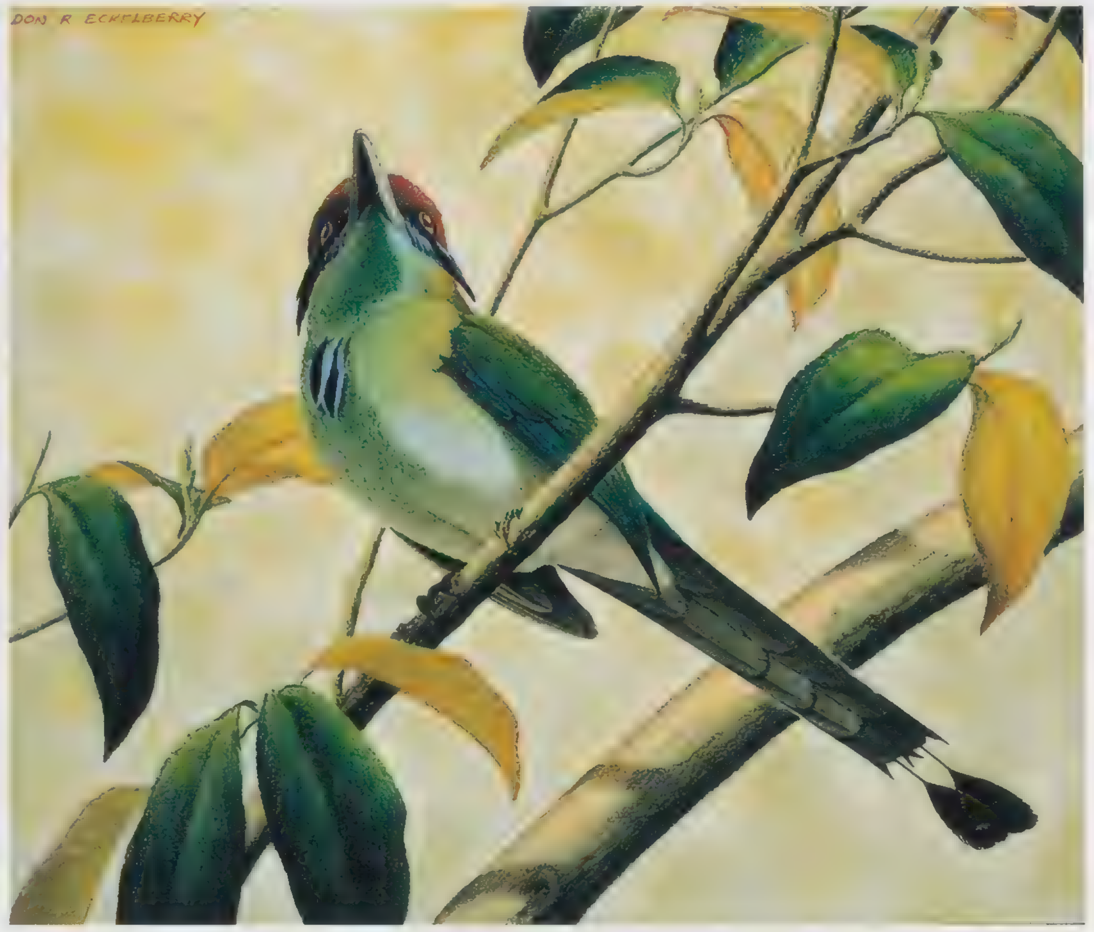
In the mid-1970s, Don Eckelberry turned his energies to creating large canvas images—such as this evocative acrylic painting of Blue Grouse—which provided more space for him to give form to his feelings.



Eckelberry has often said that he would never paint a subject he hadn't seen in life. His years prowling the wetlands of Florida provided the experience he needed to paint the Sandhill Cranes (above). In this work, he demonstrates his capacity to portray plumage texture and color in oil. Don regularly mist-netted birds—such as the Orange-crowned Motmot (facing page)—when he was in the tropics. This allowed him to examine his subjects closely before releasing them. Handling the birds provided a tactile contact that gave him a greater understanding of how a bird's feathers are shaped and give contours to its body.

mitment to the war in Vietnam. I wandered from one conversation to another, filling up like a sponge with ideas and impressions.

From midday until well after midnight the music and dialogues continued. A parade of food—hams, clams, lobster, crab, breads, and fruit—was lined up on a buffet, and people would scoop up a plateful, then re-enter the fray. At the center of it all stood Don Eckelberry in a straw hat with a drink in one hand and a cigar in the other. Like a ringmaster, he moved through the swirl of activity. He stopped to raise a question with Arthur Singer about his forthcoming book on European birds, and then he moved on to engage Roger Tory Peterson in a discussion about the merits of gouache versus transparent watercolor. I'd hear him reiterate the importance of working directly from nature, like a mantra, and by nightfall we were inside his studio reviewing his collection of drawings developed from his years of field experience. When the party began to disperse in the early morning of the next day, it had been nonstop feasting and talking. Don Eckelberry was just hitting his stride.



> *"Art is structured emotion, and it's not what is seen but what is felt in what is seen that counts."*

Many of his pronouncements that I heard during that first visit have stayed with me. His encouragement to "work directly with one's subject, alive and in the field" forced me to apply my eye to the world and directly explore what I found. His edict, "It's not what you paint or sculpt, it's how you do it," strengthened my resolve to interpret nature and search for unexplored forms and emotions there. When I think of his statement that "art is structured emotion, and it's not what is seen but what is felt in what is seen that counts," I'm reminded that whatever has been most original in my work is more the result of exploring my emotions about the subject than demonstrating my mastery of technique.

But Don provided more than just sound advice. Within a year of that first visit, he had helped me get in touch with the Cornell Lab of Ornithology, which would later publish some of my watercolors and research in *Living Bird.* A few years later, he recommended my work for inclusion in the Royal Ontario Museum show "Animals in Art," held in Toronto. Thanks to Don, my sculptures became part of a remarkable collection of historical and contemporary artwork from all over the world.

Born in 1921, young Eckelberry found nature just outside the door in Sebring, Ohio. An injury at birth, however, made walking painfully difficult. Only after a series of operations when he was five years old was he able to explore the woods. Initially he was pretty much on his own as he prowled the countryside with an air rifle collecting birds of the region. After a year, however, he put down the gun, replaced it with a pair of binoculars and a sketchpad, and he never looked back.

Drawing, painting, and keeping a journal of his field observations became obsessions. On clear days in the fall, Don would forego school to observe the migrants. By 15, encouraged and financed by his aunts and uncles, he was taking summer art classes at the Cleveland Institute of Art, had a one-person show of his work (where he sold several paintings), and was writing a column on birds for the local newspaper.

It was around this time that Don was dazzled by the work of Louis Agassiz Fuertes, which he discovered in Thornton Burgess's *Book of Birds.*

Until he saw Fuertes's work, he didn't realize it was possible for someone to paint a bird's character and capture its personality. In these paintings, Don recognized birds as he knew them in the wild, full of life and vitality. He also recognized that here was an artist who had made a living painting the subjects that Don found so captivating. He decided then and there to become a professional bird painter.

After high school, Don continued to take art classes at the Institute, but he was helped more by the thoughtful criticism of his paintings provided by his artistically accomplished uncle, Viktor Schreckengost, and Arthur B. Fuller, the chief preparator of the Cleveland Museum of Natural History. His uncle Vik (who is now well into his nineties and still painting) was someone who gave of his time, and, as Don says, "magically created form from lines and shading." Fuller, who had been a friend of Fuertes, reviewed Don's paintings for scientific accuracy. This nurturing of both aesthetic and scientific commitment gave him high standards early on for judging his work and the work of others.

As the 1940s began, Don was off to Florida to explore new areas. Sketching all the way, he laid the foundation for the thousands of direct-from-nature drawings that would become, as he says, his "Fort Knox" of information. After Florida, he headed to California, taking a job in an optics factory and looking for new species of birds to sketch and describe. On one of his field trips he met John Baker, then director of the National Audubon Society. Baker was so impressed with Don's skills as a field observer and artist that he offered him a job with Audubon. He took the position and was then officially in the "bird business," dividing his time between being the staff artist at *Audubon* magazine in New York City and warden for various Audubon sanctuaries.

This attractive portrait of an Eastern Screech-Owl appeared on an Audubon Society holiday greeting card. Over the years, Eckelberry regularly contributed the use of many of his images to conservation groups and projects.

He explored the Rainey Wildlife Sanctuary in Louisiana, went to Florida to study the Okeechobee country, and then came north to patrol Cape May Point in New Jersey for shooters during the hawk migrations. It was also in the early 1940s that Eckelberry was sent to the Singer Tract in northern Louisiana, where he observed and sketched what may have been the last Ivory-billed Woodpecker in the United States.

Working at the National Audubon Society in New York City, Don struck up a friendship with author and ornithologist Richard Pough, and the two soon began a collaboration that produced the Audubon Society's three-volume set of books on North American birds, the first of which was published in 1946. From the onset of this endeavor, the effort to paint 1,250 separate portraits of birds in color required Don's full attention, and he left Audubon to begin his freelance career as a full-time artist. Also about this time, Eckelberry was courting Virginia Nepodal, a textile artist and designer he had met in art school. They were married at Dick Pough's home and soon found the carriage house on Long Island that would become their permanent residence.

By the 1950s, Eckelberry had, as he says, "painted his way out of North America" and was taking trips, financed by his freelance work, into Mexico, South and Central America, Trinidad, and all the islands of the Greater Antilles, as well as most of the Windward Islands. On all of these travels, Don kept careful journals, sketching birds in the margins and writing detailed descriptions of plumage and tissue colors of the species he observed. Equally important were his notes on the habitat where his observations were made and the particular behavior of the species seen. Reading through these journals is an extraordinary experience. Eckelberry's colorful vocabulary and image-filled notes can transport you to the jungles, put you on a dusty village street in Mexico among the people, or place you at the table of a remote research camp savoring the taste of monkey collected for science and cooked for dinner.

His extensive field work in Mexico and Argentina brought him together with Dean Amadon, curator of birds at the American Museum of Natural History. This eminent scientist marveled at Don's "amazing knowledge of birds" and his dawn-to-dark work ethic, which kept him occupied observing, sketching, and writing up the descriptions of all he saw. Amadon would later seek Don's artistic skills for the illustration of *Eagles, Hawks, and Falcons of the World.*

Eckelberry's painting of California Quail was based on observations of birds he'd seen during his travels. He often collected plants or other objects from the locations where he first sketched birds so that his later compositions would be authentic and aesthetically attractive.

By the early 1970s, Eckelberry had established a remarkable body of work. He had painted all or most of the illustrations for 17 books related to birds and natural history. Along with the three classic Audubon guides are the three volumes of *Life Histories of Central American Birds* by Alexander F. Skutch, *Birds of the West Indies* by James Bond, *A Distributional Study of the Birds of British Honduras* by Stephen M. Russell, and two volumes of *Eagles, Hawks, and Falcons of the World* by Leslie Brown and Dean Amadon. Along with the books were an equal number of articles written and illustrated by Eckelberry for both the scientific and general audience interested in birds. Somehow, with all of his writing and illustrating assignments, he found time to create numerous miniature images that would become cherished as part of the National Wildlife Federation's annual issue of wildlife stamps.

Eckelberry had largely given up illustration work by the mid-1970s and recommended other

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THE DON RICHARD ECKELBERRY ENDOWMENT

Nature is an endless source of inspiration. There is simply no substitute for watching a subject behave in its native surroundings. Yet it is surprising how few artists today actually work in the field. Many prefer the safe, controllable environment of the studio. The heavy reliance on photographs as primary source material by today's artists has, in many cases, resulted not only in homogeneity of style and slavishness to detail, but in a finished product devoid of the emotion that characterizes the best artwork.

Couple this with the market-driven force of painting only subjects that will sell—wolves, bears, cats, raptors—all politely posed, and what you end up with is an uninspired body of work that conveys none of the excitement of encounter, no sense of the individual personality or style, of the artist or of the animal.

The idea of creating the Don Richard Eckelberry Endowment sprang from a desire to encourage artists to go back to nature as their source of inspiration, something Eckelberry has always encouraged in younger artists. The goal is to provide an annual grant to a deserving candidate to put him or her into the field for an extended time.

The Endowment also seemed an appropriate way to honor Eckelberry, who during his career possessed consummate skills as an ornithologist, field naturalist, and artist. His paintings of North American birds have been a benchmark for others to follow, and his broad knowledge of the whole field of ornithological illustration, past and present, has made him a mentor to scores of bird artists, young and old.

Yet, in many cases, fieldwork is prohibitively expensive for younger artists, so this fundamental source of learning and inspiration is out of reach. The Endowment will support painters, sculptors, printmakers, and other artists in their efforts to better acquaint themselves with the natural world.

Before the advent of photography, artists traditionally accompanied expeditions to record the landscape of newly discovered territories and sometimes new species of wildlife. Their work was an important source of information, educating the audience back home about the wonders of places they might never see. We have lost this personal, passionate touch of recording and interpreting as the artist has been increasingly replaced by the dispassionate camera.

Do we need the artist's voice at all, if there is already such a wealth of superb photographic imagery around? We do, for one unique reason—the camera records what it sees, but does not interpret. The artist, however, is free to strengthen, emphasize, select out the important elements, rearrange—all to create a statement having the imprint of his intellect and enthusiasm, as well as his craft. Works of art have the ability to resonate for centuries to come.

Because Don Eckelberry's work embodies an ideal fusion of art and science, it was not surprising that the Academy of Natural Sciences in Philadelphia decided to become the Endowment's sponsor. The Academy can provide a number of opportunities for science to nurture art, and vice versa.

An exciting prospect for a young artist, for example, could be the opportunity to accompany one of the Academy's expeditions to Ecuador, Manchuria, or other far-flung places. Working alongside scientists who are mist-netting or banding birds in their actual habitats gives artists a chance to make close-up sketches and record detail that is hard to match any other way. In addition, the Academy's world-renowned specimen collection can provide study skins, and its museum periodically hosts exhibitions of nature-related artwork—another source of inspiration.

Another crucial component of the Eckelberry Endowment is its mentoring program, in which established artists and scientists offer counsel and assistance to artists as their careers develop. Eckelberry grants could make possible visits to mentors for valuable instruction and critical feedback, or allow extended periods in the field to study on their own. A detailed investigation of a new area might be a turning point in a young artist's career.

Increasingly, as wilderness and wildlife disappear, we lose precious opportunities to experience them for ourselves. For that reason, an artist's work may take on added significance—in some cases, it may be the only thing left that will resonate with future generations.

We need eloquent spokespersons, verbal as well as visual, to show the value of the natural world. The artist has always been looked to as a "voice" of his times. But it won't have much power if it isn't passionate, personal, and skillful. For this voice to develop, personal involvement with the wild subject matter is imperative.

As the lawyer, Louis Nizer, observed years ago: "A man who works with his hands is a laborer; a man who works with his hands and his brain is a craftsman; but a man who works with his hands and his brain and his heart is an artist." The way to put "heart" into art is to provide firsthand experience with the subject matter. The Eckelberry Endowment hopes to provide young artists with the groundwork to do just that.

—Martha Hill

For more information, write to The Eckelberry Endowment, The Academy of Natural Sciences, 1900 Benjamin Franklin Parkway, Philadelphia, Pennsylvania 19103.

By the 1950s, Eckelberry had "painted his way out of North America" and was traveling deep into Central and South America, observing and painting the native birds, such as this Ashy-headed Goose.

artists for assignments when approached to do a job. He had turned his energies to painting and found more time for conservation work. Using oil and acrylic, he did large canvas images that allowed him more room to give form to his feelings. Some of these works were published as prints by the Frame House Gallery, which also published the work of Guy Coheleach, Arthur Singer, and Ray Harm. Many of these prints were donated to conservation fund-raising efforts. Along with his Frame House cohort, Eckelberry was instrumental in raising more than a quarter of a million dollars, all of which went to the acquisition of additional properties for Corkscrew Swamp.

The conservation effort Don is most proud of, however, is his work to establish the Asa Wright Nature Center in Trinidad. More than any single person, Don is responsible for the preservation and maintenance of this tropical reserve. Initially, he worked with the then-owner, Asa Wright, to spread the word to scientists and artists alike of the remarkable tropical natural area existing there. He held painting and field seminars at the center and recruited other artists to do likewise, seeking to expose the area to a wider audience.

As the site became more popular, however, it was clear that much had to be done to shore up the buildings. Bats had taken up residence near the dining room and assorted reptiles favored the building's hallways. Through energetic appeals, Eckelberry spread the word of what was at stake, held fund-raisers, and made personal contributions. Before long, the financing was in place to restore the facility and secure its preservation. It's safe to say that without Don's efforts, the Asa Wright Nature Center would not exist today.

Don's accomplishments in science, art, and conservation over the years have not gone unnoticed. An Elected Fellow of the American

Ornithologists' Union, he also served a term on the administrative board of the Cornell Lab of Ornithology. He is one of the first recipients of the Master Wildlife Artist medal presented by the Leigh Yawkey Woodson Art Museum. The Society of Animal Artists presented him with their Award of Merit—one of only two such awards given during its entire 35-year history. For his work on behalf of establishing the Asa Wright Nature Center, the Florida Audubon Society recognized him as their Conservationist of the Year.

During the past two decades, Don Eckelberry has continued to lead a busy life, although he is no longer able to go into the field or work at the easel. Restricted by illness, he nevertheless continues to share his ideas and insights with others as he maintains communication with artist and scientist friends, old and new, from around the world.

On my last visit with Don, we did most of our talking, as is his wont, well after midnight. Poking his finger into the halo of cigar smoke over his head, he punctuated each point he wished to emphasize in our discussion. As he approaches 80, Don still possesses the infectious zeal that so impressed me the first time we met nearly 35 years earlier. As we talked of Bruno Liljefors and Francis Lee Jaques and the impact these painters have had on subsequent artists who depict nature, I wondered whether Don appreciated his own impact as a painter, critic, and artistic philosopher. Some of the grand old men of American ornithology recognized his contributions early on. Robert Cushman Murphy, Amadon's predecessor as curator of birds at the American Museum of Natural History, described Don's collection of paintings for the classic Audubon guides as a "consummate success." Ludlow Griscom said Don's work was superlative and that he is "one of the rare artists who can capture the bird's personality possessed in life." Jean Delacour, the great French aviculturist, considered Eckelberry the "best bird artist of the day."

His fellow artists also appreciate his uncompromising integrity and skill. George McLean of Ontario, Canada, considers Eckelberry's bird illustrations to be "hands down, the most convincing. He said it all with economy and intelligence." Larry McQueen, a respected and successful painter of birds, feels that "Don's portraits will always be some of the greatest ever achieved. He pioneered relating birds to their environment—all in one well-balanced composition." Roger Tory Peterson, Don's longtime friend, said simply that "Don Eckelberry reigns supreme . . . the best mastery of bird depiction of any of his peers."

Don's legacy will surely be, in large part, his paintings, drawings, and field journals on birds. The best of them radiate with what he so much admired in Fuertes, the essence of the subject portrayed. They convey life, and while information is conveyed, it is the spirit in the painting that brings the observer together with nature in a moment of joy and exhilaration. And beyond the paintings is the gift that so many have received from him—a helping hand of experience and skill so that others might advance their efforts. ■

Most of his life, Don Eckelberry operated like an accomplished writer, collecting snippets of authentic ideas for what would later be incorporated into a larger story he sought to tell. His unique ideas were the thousands of images he drew of birds in life. These were moments that touched him with their poignancy and were recorded as quick outline sketches. Later, in the studio, he would use these sketched ideas as the basis for his painted compositions, making certain that his detail never overwhelmed the liveliness he had observed in nature.

Tony Angell is an award-winning author, artist, and educator living in Seattle, Washington. An elected Fellow of the National Sculpture Society, he is perhaps best known for his large stone carvings and pen-and-ink drawings of birds and mammals.

Martha Hill is the author of Bruno Liljefors: the Peerless Eye *and other books. She is the former picture editor of* Audubon *magazine.*

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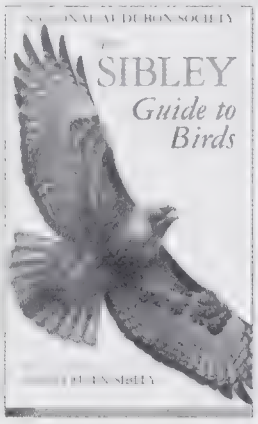

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Forgot My Pants, Lost My Mind

BY TIM CAHILL
ILLUSTRATIONS BY JEFF SIPPLE

A week with the hawkers in Texas

Falconry, I might have written recently, is that extinct medieval sport wherein guys in metal suits threw birds at fish. I admit to a large measure of ignorance regarding birds in general and falconry in particular. Tragically, I am afflicted with the agony of ornithological dyslexia. But ignorance, if it is sincere and pure of heart, can sometimes function as a knowledge vacuum. Which, I suspect, is the most obtuse and metaphysical explanation of how I ended up attending the North American Falconers' Association Field Meet in Amarillo.

Not two hours after I arrived in Texas, I found myself creeping through a dusty field, sneaking up on a small pond to ambush some ducks. The sun had just touched the western horizon and a full hunter's moon was rising in the east. The colors of the setting sun, pastel oranges and reds, shimmered on the surface

"Not two hours after I arrived in Texas, I found myself creeping through a dusty field, sneaking up on a small pond to ambush some ducks."

of the water. It was a clear, windless day, and the image of the moon also glittered on the water, so it seemed as if all of heaven and earth was encompassed in the pond.

The falconer slipped his bird (released her from his fist), and the peregrine circled up, taking a pitch several hundred feet above the pond. I was given to understand that the bells, little jingle bells that falcons wear, are necessary to locate a bird feeding on fallen quarry in high cover, although there is something anticipatory about them. A hunting falcon rising from the fist sounds a little like Christmas morning.

When the falcon had taken a pitch of about 200 feet, various humans charged the pond and flushed the ducks. And suddenly there she was, a Peregrine Falcon diving at perhaps 200 miles per hour. I now know that falconers call this power dive a stoop, as in "she stoops to conquer." (The female falcon is a third again as big as the male, and most falconers fly females.) The peregrine's wings were folded in against her body, and the wind racing through her brittle feathers and the bell slits sounded in a rising whistle. Two lines of flight, one horizontal, one vertical, intersected at a moment of savage radiance above the sun and moon shimmering below.

And that, I learned, is falconry. It is a form of personally engineered bird watching.

From the outside, falconers themselves appear to be fairly odd ducks. There were more than 300 birds at the NAFA Field Meet, both hawks and falcons. On sunny days, most often in midafternoon, most of these birds could be seen out in back of the Amarillo Hilton, sunning themselves (weathering) on blocklike perches, while the falconers stood around arguing proudly.

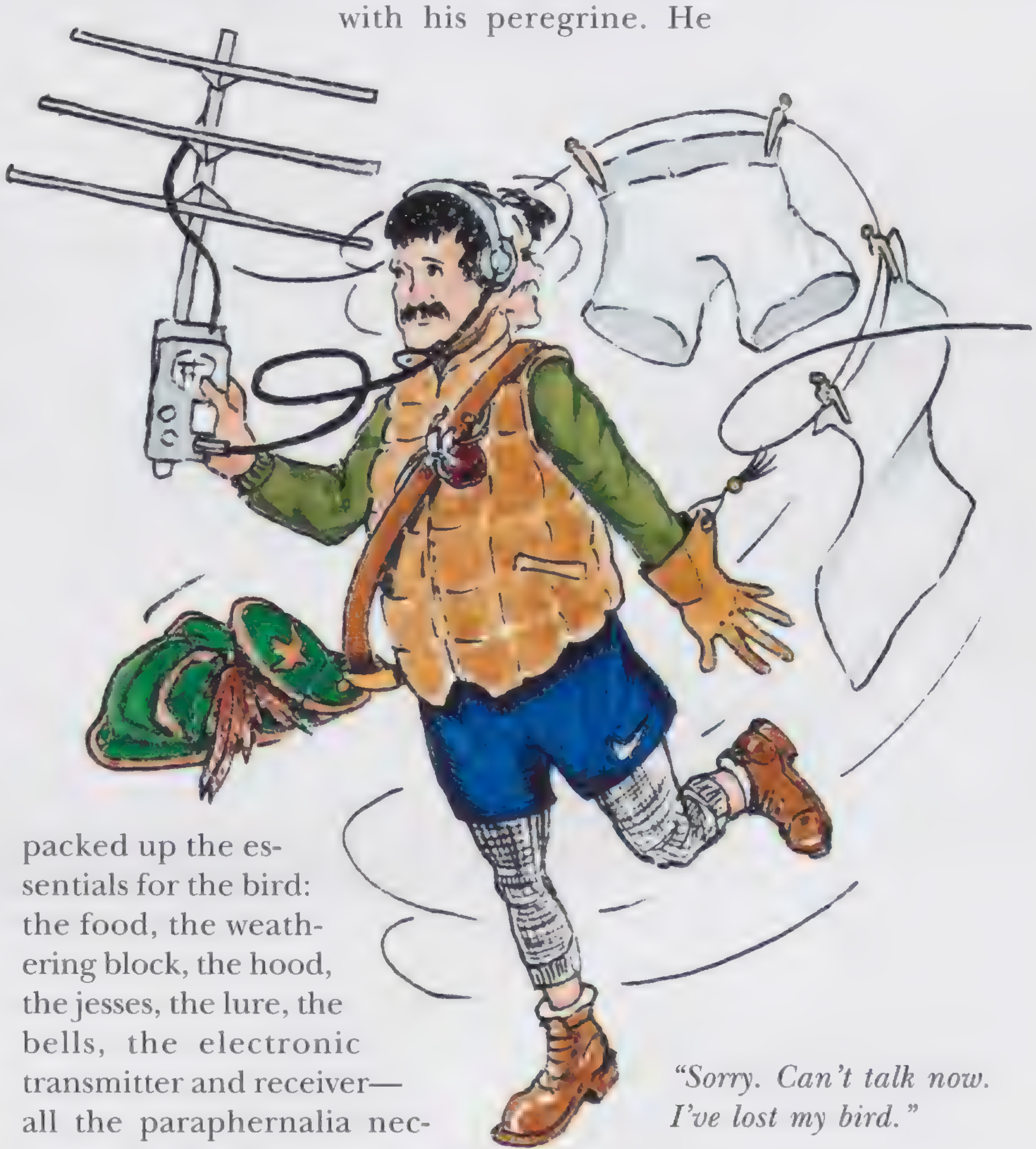
Falconers argue as a matter of course. A falconer argues, I think, because the sport requires him to bend his will to that of the bird. There is no disciplining an unmannerly falcon. A disgruntled bird will simply fly away next time it is released, so falconers take out their frustrations on other people and bicker endlessly over the fine points of their sport.

They are, I'm obliged to state, monomaniacal in their frenzy. Often they take their birds with them on social occasions, and invariably the bird will mute, which is to say, engage its impressive waste-disposal system. When this happens in someone else's house and the mutes are spread across the couch and new carpet like the contents of several tubes of toothpaste, the falconer does not discipline his bird. Nor is he likely to help clean up. Typically, a falconer in such a situation will examine the mutes and proclaim, with great satisfaction, "Now *that* is a healthy bird."

Perhaps the strangest characteristic of the falconer, however, is the complete lack of trousers on the male of the species. (I have not yet observed such conduct in the female falconer, although I intend to be patient in this regard.)

The male falconer often runs around without pants, because he forgets them in his frenzy. There is, for instance, a falconer of my recent acquaintance who lives in Winifred, Montana, not far from the breaks of the Missouri River. I'll call this fellow, oh, let's say Ralph Rogers.

One day Ralph decided to hunt the breaks with his peregrine. He packed up the essentials for the bird: the food, the weathering block, the hood, the jesses, the lure, the bells, the electronic transmitter and receiver—all the paraphernalia necessary for the comfort and safety of his falcon. Being an experienced outdoorsman, Ralph packed quickly for himself.



"Sorry. Can't talk now. I've lost my bird."

It was a warm day and Ralph had only worn running shorts, but by the time he got to the breaks, the weather had turned cold. The experienced outdoorsman then discovered that he had not packed any pants. His partner lent him the only conceivable thing he could wear to cut the wind and blunt the chill. Because the other man was about a foot shorter and not nearly so, oh, muscular, the thermal underwear Ralph now wore had that overstuffed, over-the-calf look that so fascinates clothiers. Inevitably, the bird rode a particularly strong thermal, rose out of sight, caught a whiff of the jet stream, and got lost. Ralph had fastened a small transmitter to the bird, and he was using a black box with an antenna (the receiver) to find her.

The signal—it always happens this way—took the falconer through a small town. Now, when a man is searching for his bird with a receiver of this sort, he must constantly listen to the beeping of the machine, and turn in a complete circle, carefully blocking one point of the compass with his body in order to isolate the sound.

"Geez almighty, Madge. It's some of them devil worshippers Geraldo was talking about."

Falconers understand such antics at a glance. The rest of us find it bewildering. Here's a man frantically running through your backyard, holding a little black box with an antenna on it and wearing what seems to be a pair of longjohns bursting at the seams. Every once in a while he performs a slow-motion pirouette, then gallops off hysterically in one direction or another. Naturally, seeing such a person whirling through your yard, you might be inclined to inquire as to the nature of his business.

"What the hell's going on here?"

"Sorry," your falconer in lingerie is going to reply. "Can't talk now, I've lost my bird."

For the average outsider, this translates into: "Can't talk now, I've completely lost my mind."

The ancient field sport of falconry has been the subject of some controversy in the past few years. There are a number of people who simply can't stomach blood sport of any variety, and they are people of good hearts. But I think it is wise for falconers to point out that they've had a guiding hand in bringing back the majestic Peregrine Falcon from near extinction. In 1965, there were fewer than 40 known pairs of peregrines nesting in the Lower 48 states. DDT was killing them. In 1970, the Peregrine Fund, a nonprofit organization supported by scientists, ecologists, hunters, and falconers, began raising peregrines in captivity and releasing the young. Today there are 1,650 known nesting pairs in the United States, not counting Alaska. It's difficult for those of genuinely good heart to take issue with these statistics.

Some observers feel that falcons are invariably successful in their hunts. This is not so. A man with a shotgun is a more effective predator than any peregrine.

Indeed, the point of falconry is not merely to take game; the important issue is the manner in which the game is taken. One bright Amarillo morning, for instance, I was out by a duck pond with some falconers and noticed that the man flying the bird had it "wait on," which is to say, circle above, several hundred yards from the pond. When we flushed the ducks, the falcon stooped, but she was far out of hunting range, and the ducks flew off unharmed. Later, I asked the falconer why he had set up his bird for certain failure. "I want her to learn that she has to take a higher pitch," he said. "If she had been over the pond, it would have been a simple slaughter."

I then understood that falconers, like fly fishermen, require a certain perverse elegance in their sport. They are rather like the sexually obsessed in this regard: "Well, if I can't do it with whips and midgets, I'd rather not do it at all."

Most hunters—all but the most doltish fringe—speak about respect for the hunted. But a falconer's concern for the quarry is legendary. Consider the story of an individual I met in Amarillo. He is a pillar of moral authority in his community and, for that reason, has asked me not to reveal his identity. Let's just say that one fall day, on his annual hawking vacation, he was out flying his Harris's Hawk with several friends. This was in Colorado, and the friends were flying their hawks from their fists.

Now Harris's Hawks, I've discovered, are unusual in that they hunt in groups, using strategy. I imagine the scene was rather like the one I had witnessed out in the corn stubble near the Amarillo airport. I recall a rabbit being pursued by the hawks. Once again it had occurred to me that if killing game were the purpose, a shotgun would serve better here. We scared up a rabbit, shouted "Ho ho hawk!" and the hawks sprang from four fists as the rabbit bolted slow off the mark, but one of the pound-and-a-half birds came in high, another low. The rabbit—there were several wild Ferruginous Hawks cruising the field, and my guess is that the local bunnies were used to this sort of thing—stopped short so that the high hawk overflew him. The second Harris's Hawk came in only inches off the ground, but the rabbit leapt a full four feet into the air. Then it disappeared in a series of sharp angles and lost itself in the corn stubble. There was, on the part of the falconers, some small grudging applause for the rabbit.

The scene was somewhat similar in Colorado that day: four men walking through a field, hawks on their fists. A rabbit broke, the hawks flew. The rabbit bolted toward the gravel road. Between the road and the field, however, was an irrigation ditch. The day was cold and turning colder. A thin skim of ice had formed over the water in the ditch.

The rabbit had no time for caution and attempted to run across the ice, which broke. Now we have four men standing around with hawks on their wrists, looking down into a ditch with some consternation. The rabbit was drowning. It attempted to crawl up on a ledge of ice that immediately gave way, plunging the rabbit back into the water. When it surfaced the third time, ice was forming on its head. The men were abashed.

It is true that only moments earlier these men had earnestly desired the annihilation of the rabbit, but this drowning wasn't nearly what they had in mind.

Someone, it was decided, would have to save the rabbit. The gentleman in question—a moral pillar of his community, remember—took the task upon himself. First he removed his boots and socks. Then it occurred to him that the water might be two or three feet deep. A man could spend the rest of the day wearing wet pants. No, best to take them off. But his shirt and parka hung down past his waist, and, for all he knew, the water could be chest deep.

The rabbit was weakening.

No time to waste. Get the clothes off and save the rabbit. Hurry.

Imagine the scene: Three guys standing around with vicious-looking hawks on their fists and one naked man shivering on the subfreezing, wind-whipped plain.

Which is precisely what greeted the elderly couple as they drove down the lonely road that paralleled the ditch. There was a slowing of the car and our falconers had the enduring impression of two pairs of eyes, feeling much of what a driver feels when a deer is frozen in the headlights.

"Geez almighty, Madge. It's some of them devil worshippers Geraldo was talking about."

The squeal of tires, a spray of gravel.

The postscript here is that the rabbit was saved. It trembled in the men's hands, badly chilled. If they released it, this rabbit was going to die of hypothermia. The hunting trip was cut short, the hawks were hooded, and the rabbit was driven back to the motel, where it was warmed and dried with a blow-drier. It was later released in a large field where—if the coyotes haven't gotten it, if the wild hawks or foxes have somehow missed it—it's still alive, fat and sassy.

Nonetheless, I have a persistent vision of the maids in that motel gossiping: "Don't know who they are, but they come here every year. Capture rabbits and style their hair. I think they're mad hare-dressers."

The man who swam naked for the rabbit was finally foolish enough to tell his wife about it. And now, every time he comes home from a hawking expedition with some matter of grave or amusing import to relay—"Honey, guess what happened today?"—she replies in the world-weary tone of one who has experienced much in life and is not often surprised, "You didn't get naked again, did you?"

So yes, a week in the company of avid falconers has considerably broadened my horizons. Falconry, I can now confidently state, is that flourishing contemporary field sport in which frenzied, monomaniacal men (and some frenzied, monomaniacal women) soil their neighbors' living rooms with bird droppings and run naked in the snow. ■

Imagine the scene: three guys standing around with vicious-looking hawks on their fists and one naked man shivering on the subfreezing, wind-whipped plain.

Tim Cahill lives in Montana and is editor-at-large of Outside *magazine and a contributing editor at* Esquire *and* Rolling Stone. *He is the author of* Pecked to Death by Ducks, A Wolverine Is Eating My Leg, Road Fever, *and other books.*

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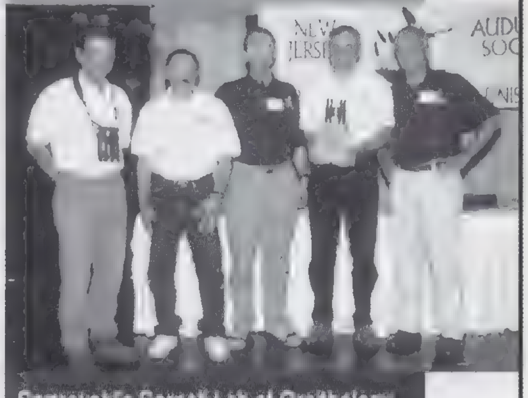

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EAGLES

by Raymond Carver

It was a sixteen-inch ling cod that the eagle
dropped near our feet
at the top of Bagley Creek canyon,
at the edge of the green woods.
Puncture marks in the sides of the fish
where the bird gripped with its talons!
That, and a piece torn out of the fish's back.
Like an old painting recalled,
or an ancient memory coming back,
that eagle flew with the fish from the Strait
of Juan de Fuca up the canyon to where
the woods begin, and we stood watching.
It lost the fish above our heads,
dropped for it, missed it, and soared on
over the valley where the wind beats all day.
We watched it keep going until it was
a speck, then gone. I picked up
the fish. That miraculous ling cod.
Came home from the walk and—
why the hell not?—cooked it
lightly in oil and ate it
with boiled potatoes and peas and biscuits.
Over dinner, talking about eagles
and an older, fiercer order of things.

From Where the Water Comes Together with Other Water, published by *Vintage Books/Random House. Photograph by Mark J. Bilak.*

In the Field

FAREWELL, A65

by Jack Connor

Bonding with Bald Eagles

The last time I heard A65's signal was by telephone. It was a Saturday in early September, and I was organizing papers in my office at school when my wife called. "Two of your eagles are circling right over our yard," she said, "one adult and one juvenile."

"Go get the radio!" I bellowed—in a loving and affectionate way.

Jesse complied, running into the garage where we kept the receiver lent to us by New Jersey's Endangered Species Program and then out into the backyard. "They're still up there," she said into the phone. A moment later, I could hear the *beep! beep! beep!* of the transmitter coming through the radio and the phone.

"It's A65," I said.

"He's chasing the adult," Jesse said. "They're headed toward the river. There they go . . . out of sight. Should I follow them in the car?"

"No," I said. "If he's still begging for food, he won't be leaving soon."

Fourteen weeks earlier, in late May, I had held A65 in my arms while he was banded and the transmitter and harness put in place. He was the first of his siblings to be lowered from the nest, followed a few minutes later by his big sister, A66, and then by his smaller brother, A67.

Ten of us—a mix of volunteers and employees of New Jersey's Endangered and Non-Game Species Program, including a tree climber, a veterinarian, several biologists, one student intern, and other nest monitors like me—had assembled at the site. Both parents circled the nest tree, squeaking in their feeble Bald Eagle voices while we weighed and banded the three chicks, took blood samples, and measured their bills, talons, and flight feathers. Each eaglet was fitted with an aluminum U.S. Fish & Wildlife Service band on its right leg and a green state band with large numerals (theoretically readable through a telescope) on its left. The radio harnesses and transmitters strapped onto A65 and A66 were part of a telemetry project intended to help the program map how the birds were using the surrounding habitat and to document which local areas were most important to their survival.

I have been watching the adult pair, Brownie and Greenie, for five seasons now. The male is named for the brown feathers that still remained on his head during his first year of fatherhood and his mate for the green band she wears on her left leg, evidence that she herself hatched in a nest in New Jersey, probably one of the nests along the Delaware Bayshore on the southwestern side of the state. In 1996, Brownie and Greenie pirated a nest from a pair of Red-tailed Hawks, fledged their first chick, and became the first eagles to breed in Atlantic County in at least 50 years. With one bump in the road in their third year, their success has continued: two young fledged in 1997, none in 1998 (after their original nest collapsed), two fledged in 1999, and this last season, an eagle "hat trick": three young fledged. Eight young in five years is an excellent record and parallels the recent general success of the Bald Eagle in New Jersey. In 1999, 21 pairs of eagles nested in the state and fledged 28 young; a dozen years ago fewer than five nesting pairs existed in the state and only one or two eaglets fledged each year; 20 years ago only a single pair nested in the state.

The radios meant a new kind of birding for me, and for my most frequent companions, Larissa Smith, one of the program's biologists, and Bert Hixon, a former student of mine. In previous seasons we had been unable to follow the juveniles away from the nest site or to identify with certainty any juvenile seen elsewhere as one of Brownie and Greenie's offspring. Now we could track them individually, follow them wherever they went, study how they found food, see where they roosted, and chart their progress toward independence.

A65 seemed the most adventurous of the trio—the first to fly, the first to leave the nest each morning, the first to roost away from the nest, the first to venture out of sight of the nest area, the first to spend a night away from home. Both his siblings appeared to wait for his lead, even A66, the largest of the three. A67, the runt of the litter, was the last to hatch, the last to fly, and the last to spend a night away from the immediate nest area. He was still sitting in the nest, begging for his parents to return, weeks after his brother and sister were flying.

One midday afternoon, Bert and I watched A65 leave both siblings at the nest area and ride a thermal up over the nest and soar away, out of sight, toward the wetter and saltier marshes to the east. We chased him, zigging and zagging down various roads, holding onto the radio antenna on the car roof to catch a signal, until we finally relocated him several miles away, on the Mott's Creek salt marsh. We had just stepped out of the car when his sister arrived, gliding overhead. Somehow, she had followed her brother visually or knew exactly where he was headed.

Radio tracking taught me, among other things, that I had been underrating Brownie's contributions as a father. In past seasons he had always seemed to disappear from the nest site in midsummer, soon after the juveniles began to fly, and become a deadbeat dad. While Greenie continued to bring food back to the nest, Brownie apparently left the scene and ceased caring for the young. The radio and transmitters showed I was wrong. Brownie fed the chicks nearly as often as Greenie, but almost always away from the nest—in places I hadn't known to look until the radios led us to them. Greenie captures larger prey—terrapins, ducks, Laughing Gulls, and even herons and Glossy Ibises—and comes back to the nest calling, so that the young race each other back to their home tree, where they squabble over the food. Brownie captures smaller prey, generally fish, it seems, and delivers them away from the nest, usually quietly. He likes to show one juvenile the prey and then lead the youngster down to the ground where it feeds while he stands nearby, looking around.

Our first crisis came two months after banding, about six weeks after her first flight, when A66's signal stopped moving for a couple of days. Was she hurt, ill, dead? Bert and I spent a long, worrisome afternoon tracking to the source of the signal, first by canoe and then by foot, until deep in a tangle of red cedar and pitch pine, we found the radio dangling from high in a tree. The cotton threads that held the harness had broken and the radio had fallen away. The threads are supposed to last 8 to 10 months, about as long as the radio's batteries, so the bird will be relieved of the weight. The threads on A66's harness had broken six months too soon.

We lost A65's signal for the first time a couple of weeks later. I spent an entire morning cruising the county with the antenna out the window, driving in ever-widening circles and hearing only static. Bert refound him the next day several miles north of the nest site, across the border in Burlington County. The next day A65 was back, closer to home, at Mott's Creek, scaring up gulls and Black Ducks.

A few weeks later came that Saturday in September when Jesse saw him chasing one of his parents right over our yard. That was the last anyone saw or heard of A65, as far as I know. The next day I couldn't find him in any of his old haunts, though I circled the county. Bert tracked after him several times during the next week also without success. We felt we had lost a friend, although Larissa pointed out, "We have to remember: he is *supposed* to leave eventually." He migrated southward, we assume. If all has gone well for him, he is spending this winter somewhere in a warmer-weather state, learning to fend for himself. He might come back to New Jersey, perhaps in another four years, when he is old enough to breed himself. Or, he may find a mate and take up residence somewhere else on the Atlantic coast: Delaware? Chesapeake Bay? the Carolinas?

The program won't be using transmitters on Bald Eagles next year. Money is tight, manpower is limited (even volunteer manpower), and other species require attention. While eagles have come back from the brink of extirpation in the state and are now so numerous it has become hard to keep track of them all, other species seem to be sliding in the opposite direction: Piping Plover, Least Tern, timber rattlesnake.

A65's transmitter should keep broadcasting through this winter, however. If you see a first-year Bald Eagle with a gleaming green band on its left leg, take a careful look. Or, just tune your radio to 15.0742. I would be thrilled to hear from you or him. ■

KATHY ADAMS CLARK/KAC PRODUCTIONS

"He migrated southward, we assume. If all has gone well for him, A65 is spending the winter in a warmer-weather state, learning to fend for himself."

GOOD SENSE AND GOOD GLASS

by Pete Dunne

Hold it. Don't read this column unless you can give it your undivided attention. You are about to read something that will change your life.

I'm serious. Take the phone off the hook. Turn out the dogs. Move away from the window, the television . . . any distraction.

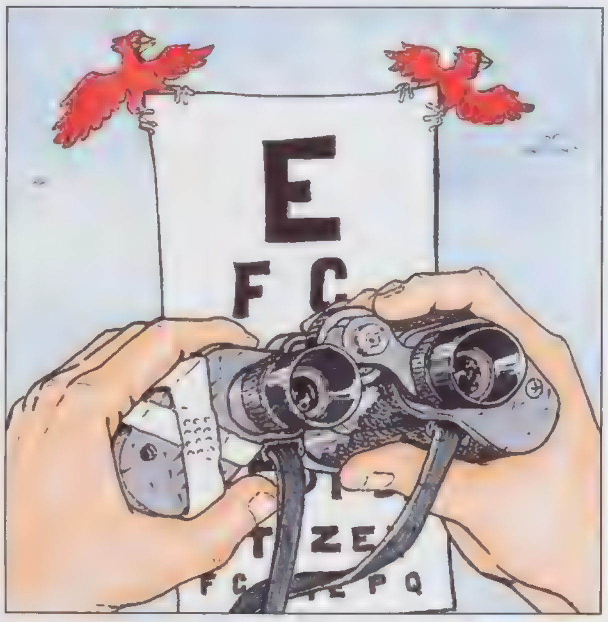
Ready? Good. Here's the revelation: those old binoculars of yours have ceased to be an ally. They are keeping you from enjoying birds as much as you should. It's time that you retire them and buy one of the new generation of birding optics.

Don't scoff. Don't get defensive. If your binoculars are more than 20 years old, their shortfalls are shortchanging your birding experience every time you go out. So fix the problem. Buy new optics.

Oh, I can hear your excuses already. The denials. The bland certainty that *other peoples'* binoculars may not be up to snuff, but *your* binoculars are impervious to use and time and, in defiance of physics, have miraculously kept pace with 20 years of optical advances.

Au contraire! What's happened is that you have come to accept a lower level of performance from your instruments and/or you are compensating for the shortcomings of your glass with greater concentration and skill.

How do I know? Because I get to see avid birders every single day who are armed with instruments that are only a step away from being museum pieces at the Smithsonian. People like the senior birder packing the Bausch and Lomb Zephyrs he bought back when a trip to the Everglades was considered going on a foreign birding tour. These birders always insist that their glass is working fine. And it is . . . for a petri dish.



Psst. Turn the instrument over. Look at the sky through the objective lens. The stuff that looks like nebulas viewed through L.A. smog is called mould. Though it may hold the key to the cure of cancer, it's degrading your birding experience.

Here's another favorite of mine. The middle-aged Zeiss 10x40 owner. He's an ace birder who bought these classics when he was in his thirties. "These bins work just as well as the day I bought them," he'll insist, *and it's probably true.* The problem is, the eyes of the ace birder don't work as well. The Zeiss 10x40 is a good but unforgiving glass. The focus is critical, the depth of field shallow.

It's not a glass for eyes that have lost the elasticity of youth. When this ace birder tries to find a warbler at close quarters, in a blurry latticework of branches, he'll pay the price for his obstinacy—an unidentified bird. Look. I'm not trying to be nasty. I'm trying to give you back the joy of birding. I'm trying to get you to admit that you need new binoculars.

Do you have any idea how good binoculars have gotten since that dark age when "coated optics" still resulted in a 15 percent loss of transmitted light and "close focus" was 15 feet? Today's new class of alpha birding instruments are lighter, quicker, brighter, sharper, and more user friendly than anything on the market when Jimmy Carter was in the White House. The result is that we are seeing birds better than we have ever seen them before.

Want proof? Look at the two newest North American field guides—Kenn Kaufman's and David Sibley's. Kenn's guide uses photographs that are (insofar as photographers attempt to capture images that show every feather) supernatural renderings of birds.

Why would a birder as respected as Kenn use supernatural images in his book? Because today's optics give users supernatural intimacy and transmit details that are feather-edge fine.

David Sibley's guide portrays every bird in North America in flight. An expert's affectation? No, there are binoculars so facile that they allow users to see and study and identify fast-moving birds in flight.

You say you can't focus on a warbler moving between trees? Precisely! That's why you need new optics. ■

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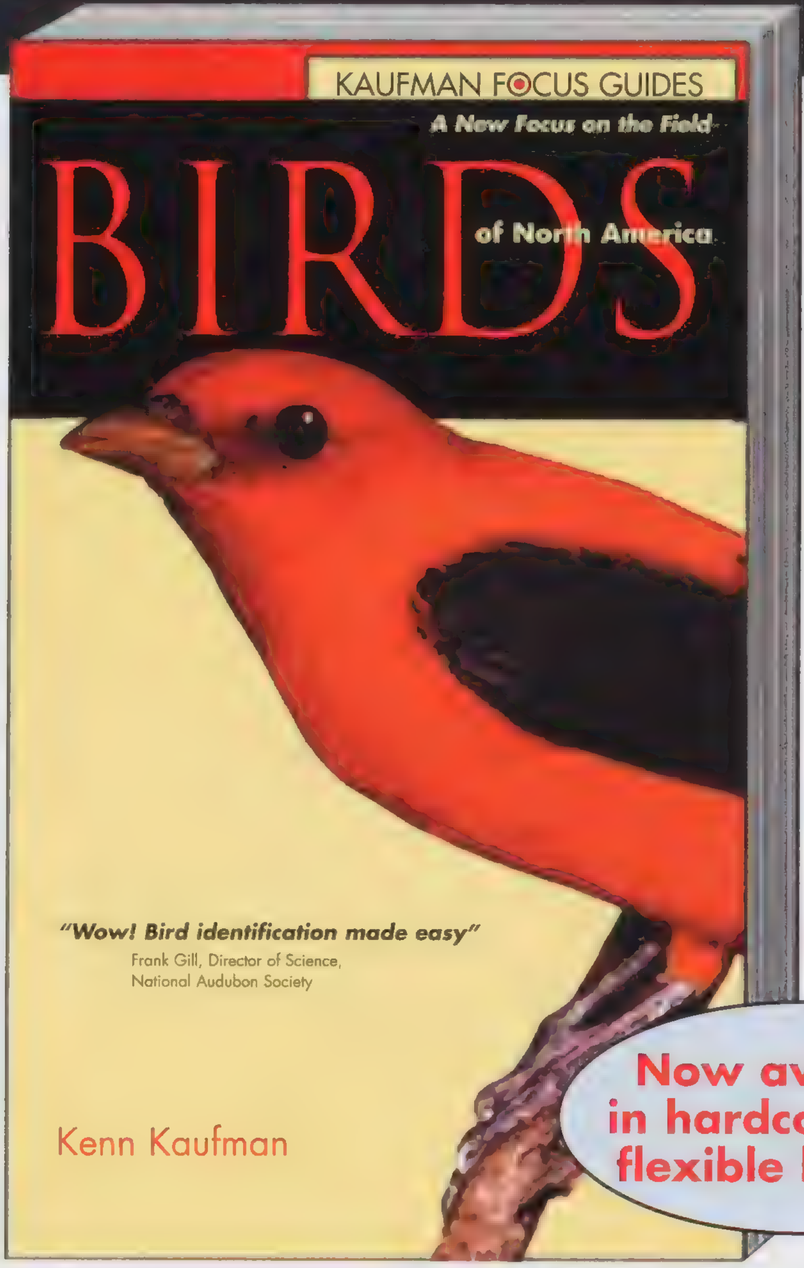
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LIVING BIRD

SPRING 2001 VOLUME 20 NUMBER 2

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Two long-awaited field guides hit the market simultaneously. How do they stack up against each other and the guides that preceded them?

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Nearly a century after Danish ornithologist Alfred Bertelsen began his explorations of northern Greenland, five researchers retrace his steps. What they find is disturbing.

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Tracking down one of nature's most secretive songsters.

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The silence of the lands.

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Stringers.

GREETINGS FROM SAPSUCKER WOODS

This morning I visited Kevin McGowan and his assistants as they banded and tagged 15 American Crows they had just caught. Many of you already know Kevin. In addition to being curator of Cornell's bird and mammal collections and a member of the Lab's big-day birding team, he is one of our technical editors and sometimes writes features for *Living Bird* (see page 8).

But Kevin is also a nationally recognized expert on crows and has been studying a local population of these birds for more than a decade. Each spring, he finds and climbs to numerous nests in the Ithaca area, banding and placing wing-tags on the young so he can document their movements.

Kevin's work took on more urgency recently as West Nile virus began spreading into our region after an initial outbreak a couple of years ago in the New York City area. This may well be the year that we see a massive die-off of crows here. Kevin is now trapping as many crows as possible, taking blood samples and marking each bird with wing-tags and bands, which will enable him to track the effects of the epidemic. The data he gathers could provide vital information on how exotic diseases spread through wildlife populations.

Unfortunately, West Nile virus is probably here to stay, and it's impossible to say what ultimate effect it will have on North American birds. But David Wilcove's "Spotlight" column (page 6) provides a chilling look at what can happen when bird populations are exposed to exotic diseases.

Tim Gallagher
Editor-in-Chief

Cover: Few North American songbirds are as striking as an adult male Rose-breasted Grosbeak in full breeding plumage. Famed nature photographer Tom Vezo took this colorful spring portrait on Long Island, New York.

Right: Uncommon and secretive, a Swainson's Warbler can be a photographer's worst nightmare. Fortunately, this did not deter William Burt, who took this rare image of a singing male. For more about this species, see page 32.

Back Cover: A feeding Ruby-throated Hummingbird provides a fitting accent to the subtle beauty of a willow in bloom. Photograph by David Stimac.

LIVING BIRD

SPRING 2001 VOLUME 20 NUMBER 2

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Letters

BORN AGAIN BINOS

Readers who take Pete Dunne's advice to heart and upgrade their optics ("Good Sense and Good Glass," Winter 2001) can give their retired "classic" binoculars a second life. The Birders' Exchange program takes both new and used (but still working) optics and matches them with Latin American scientists and educators working to conserve birds in the Neotropics. Many local people doing vital on-the-ground bird conservation work lack even the most basic equipment, such as binoculars and field guides; Birders' Exchange exists to give these people the tools they need. Birders' Exchange is a collaborative program of the American Birding Association and the Manomet Center for Conservation Sciences. Please send equipment donations to American Birding Association, Birders' Exchange, 720 West Monument Street, Colorado Springs, Colorado 80904. For more information, call Betty Peterson at (508) 224-6521 or send e-mail to her at <bpetersen@manomet.org>.

Lina DiGregorio
Education and
Conservation Coordinator
American Birding Association
Colorado Springs, Colorado

REMEMBERING A FRIEND

It was interesting that Tony Angell's fine tribute to Don Eckelberry ("The Heart of an Artist," Winter 2001) appeared in *Living Bird* within a week of Don's death. An even bigger surprise to me is that the original painting of the Florida Sandhill Cranes on page 22 is hanging in my parlor. This painting previously hung in my office at the American Museum of Natural History for several years. Then Don told me to keep it, which I was glad to do.

Don and I were good friends. We had been on lengthy trips to Mexico and Argentina together. I am 88 years old now and relatively inactive.

Dean Amadon
Tenafly, New Jersey

OUT OF AFRICA

I enjoyed Mel White's latest column, "African Dreams . . . and Nightmares" (Winter 2001). His experiences in Africa were just like mine, as was his bird list. I remember walking on a dust track out of camp and telling myself that if Livingstone walked all over Africa more than a century earlier without getting "biffed," there couldn't be any danger in taking a 300-yard walk. Still, I felt so nervous I expected an invisible orchestra to strike up at any moment with background music to heighten the tension. (A year later, in that same place, a girl sleeping with her legs outside her tent to keep cool was dragged out and killed by a lioness!)

I, too, didn't want to do anything except look for birds and identify them, so I sympathized with Mel when he described his days on Kilimanjaro as a waste of bird-watching time. But the most magnificent stroke of all was his dismissal of his ascent of the mountain in a few words and his rapturous description of the Lammergeier that materialized. If ever anyone produces a bedside book of memorable passages on the subject of birds, Mel White on Kilimanjaro would be my first choice for it.

John Loft
Louth, Lincolnshire
United Kingdom

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

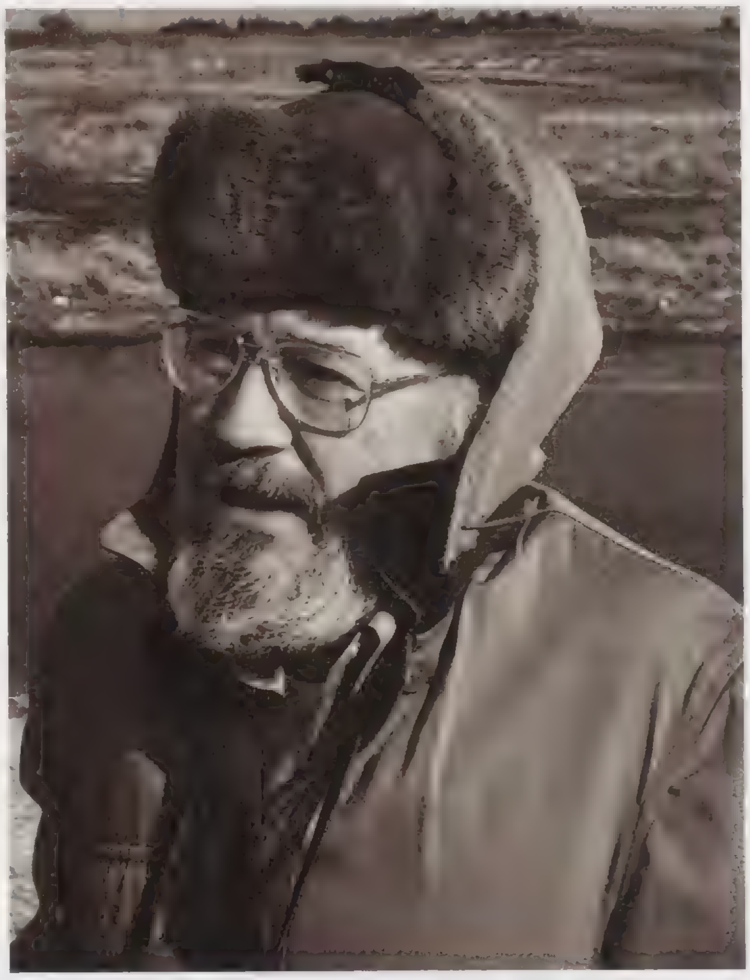
In Memoriam: Don Richard Eckelberry (1921–2001)

Don Eckelberry passed away on January 14, 2001, a few months shy of his eightieth birthday. An artist of penetrating insight, he leaves behind a legacy of bird portraiture descended directly from the legendary Louis Agassiz Fuertes, Don's own source of inspiration. Not content to fill his life with fieldwork, painting, and writing, he gave willingly of his time to others, offering criticism, advice, encouragement, and, often financial assistance. Two generations of contemporary bird painters were nurtured and inspired by his artistic skills, keen intellect, and ineffable wit. If the genius of Roger Tory Peterson was in describing the external subject, capturing details essential for identification, then Don's genius was the portrayal of the internal bird, giving it vibrant character and linking it convincingly with nature.

Don was as articulate with words as he was expressive with pencil and paint. He wrote articles on bird painting, lectured frequently on this subject, and conversed constantly with other artists, both aspiring and established. His home, which he shared with his wife Virginia, a fabric designer, became a hub of activity for more than 40 years. Throughout this time, the Eckelberrys hosted a continuous flow of explorers, writers, artists, and dear friends from a variety of places such as Iceland, Costa Rica, Trinidad, Japan, and Africa. Those of us fortunate enough to make such visits always left feeling restored and invigorated from our stay.

Don's legacy is an impressive one. He illustrated 17 important books on birds and nature, wrote numerous articles, created many of the most inspired artistic images of birds ever painted, and he was a successful advocate for conservation and the environment. For some people, this might have been enough, but throughout his busy life he found time and personal resources to help hundreds of other artists from throughout the world who came to his home seeking advice and council. That many of the artists who celebrate nature in their work speak so eloquently in America today is surely a result of Don's influence on the field. His unrelenting conviction that an artist must paint directly from nature with passion based on understanding has had an extraordinary influence, helping to raise bird illustration to the level of fine art.

We who knew him well already miss hearing those original Eckelberry stories filled with marvelous descriptions of places and people, both zany and distinguished, and all told to perfection in the patois of the place. We'll miss his always enthusiastic response to an original idea or work of art and his unflagging encouragement to seek our own genius. We are fortunate that his prodigious body of work will speak clearly for many generations to come and that the memory of his spirit of generosity and kindness will endure through those he touched so deeply.



Don Richard Eckelberry

Check the Eckelberry Endowment web site at <www.eckelberry.com> and consider giving a tax-deductible contribution in memory of Don Richard Eckelberry.

—*Tony Angell*

AN EAGLE'S STORY

We're sorry to report that the young Bald Eagle Jack Connor wrote about in his last "In the Field" column ("Farewell, A65," Winter 2001) was found dead this past December at Forsythe National Wildlife Refuge in New Jersey, just a few miles from the nest where it had fledged six months earlier. The bird was identified by its band numbers. "Although I know intellectually that most raptors die before adulthood and that the natural world is tough on all young creatures," says Connor, "I get a lump in my throat driving past the places where I watched him trying to learn how to hunt and survive."

Spotlight

THE SILENCE OF THE LANDS

by David S. Wilcove

A cautionary tale of birds and exotic diseases

As spring unfolds, two types of bird watchers will be out in force. One type—the binocular-clad brethren—will be scanning the treetops for warblers. The other—armed with rubber gloves and plastic bags—will be scanning the ground for corpses, looking for victims of West Nile virus. Previously unknown in the Western Hemisphere, West Nile virus appeared suddenly in the New York City area in the fall of 1999, leaving a trail of dead birds in its wake. Mosquitoes, in turn, transmitted the virus from infected birds to people, leading to dozens of cases of human encephalitis. With the coming of winter and the death of the adult mosquitoes, health officials hoped the virus would die out, but more dead birds the following spring quickly put that theory to rest. The virus is somehow able to make it through the winter, thus assuring more work for health officials in the spring of 2001 and perhaps for many springs to come.

The commotion over West Nile virus reminded me of another place, one as far from New York City as any spot in America: the Alakai Swamp on the island of Kauai. Located on a montane plateau approximately 3,000 feet above sea level, the Alakai is less a swamp than a rainforest, with the emphasis on "rain." In parts of the Alakai, the annual rainfall exceeds 400 inches, making it one of the wettest, muddiest places on earth. Add steep ravines, treacherous streams, and absolutely no creature comforts, and you have a place that holds little appeal for most tourists. But among Hawaiian bird watchers, it is legendary, because until recently, the Alakai was the only place in the state that retained all of the native, forest-dwelling birds that were present when famed explorer Captain James Cook of the Royal Navy arrived in 1778.

The long, sad history of Hawaii's birds is part of the folklore of American ornithology. During the Polynesian era, which began about 1,500 years ago and ended when the islands were taken over by Western settlers, perhaps as many as two-thirds of Hawaii's land birds were driven to extinction through habitat destruction, overhunting, and the introduction of rats, pigs, and other nonnative species. Western settlers destroyed much of the remaining forest and introduced thousands of additional exotic species, such as mosquitoes, which are thought to have arrived in 1826, when a British ship dumped the dregs from its water barrels into a nearby stream. Those dregs contained mosquito larvae, which hatched into adults and quickly spread to the other islands. The mosquitoes became the vectors for two diseases, avian malaria and avian pox.

Biologists do not know whether the disease organisms had long been present in the wintering populations of shorebirds and ducks but unable to infect the native land birds without the mosquitoes or whether the pox and malaria arrived with the alien birds brought to the islands by settlers. Whatever the case, the mosquitoes unleashed pox and malaria on the native land birds, which had no immunity to them. By the end of the 19th century, many of the endemic birds had simply disappeared. At least half of the land birds that survived the Polynesian era are now gone, victims of diseases, additional habitat destruction, and the spread of exotic species.

For a long time, the mosquitoes did not venture far enough up slope to reach the Alakai, and the ceaseless rain and inhospitable terrain prevented people from clearing the forests. Thus, until the late 1960s, it was the only place in Hawaii with a more or less intact avifauna, featuring a half-dozen or so critically endangered species. The first bird to vanish was the Akialoa (a honeycreeper with a long sickle-shaped bill), last sighted in 1969. Its disappearance was a tragedy, but not an unexpected one: it had long been the rarest of the forest birds. Biologists, however, felt reasonably sure the other birds would be around for awhile.

Then, suddenly, the avifauna of the Alakai collapsed. The Kamao, a species of thrush related to the Townsend's Solitaire, went from hundreds, perhaps thousands, in the early 1960s, to a couple dozen by 1981, to none by 1990. The population of Ou (a pudgy yellow and green Hawaiian honeycreeper with a peculiar, parrotlike bill) dropped from a few hundred in the late 1970s to none by 1990.

But the most poignant loss was surely the Kauai Oo. A sleek chocolate-brown honeyeater with bright yellow thighs, the Kauai Oo was the last of a noble line of oos, celebrated in Hawaiian chants and feather-crafts. At one time, four species of oo lived on Kauai, Oahu, the Big Island, and Molokai. All the others vanished in the 19th century, leaving the small population of Kauai Oos in the Alakai the sole surviving members of the genus. About three dozen were thought to inhabit the Alakai in the late 1960s, but by 1981, only a single pair remained. After Hurricane Iwa struck Kauai in 1982, the female was never seen again. The lone male survived for an additional five years, vigilantly defending his little territory, constantly singing for a mate that never reappeared. On April 29, 1987, two biologists exploring the heart of the Alakai paused to listen to the sweet whistled song of the oo, not realizing that they would be the last people ever to hear its music. The next time biologists visited the Alakai, the Kauai Oo was gone.

Why the birds of the Alakai vanished so suddenly may never be known. Many biologists believe that only a disease epidemic could explain such a rapid loss of birds in a landscape unaltered by people. One theory holds that when hurricanes Iwa and Iniki struck Kauai in 1982 and 1992, respectively, many of the Alakai birds sought refuge in the lowland valleys, which are infested with malaria- and pox-carrying mosquitoes. Yet some species were declining several years before the hurricanes struck, suggesting that a few mosquitoes were infiltrating the Alakai as early as the 1970s.

A few years ago, a friend and I hiked into the Alakai, eager to see what birds remained. I had long since grown accustomed to seeing the *former* habitats of birds—soybean fields that had once been tallgrass prairies, clearcuts in place of ancient Douglas-fir forests—but this was different. The forest was still there in all its glory, and yet many of the birds were gone. As I marveled at the gnarled old ohia trees and watched the still-common Iiwi and Apapane (two bright red Hawaiian honeycreepers) feeding among the leaves and blossoms, I was struck by the realization that these very trees had sheltered oos and Ous only a couple decades ago. At times I imagined the missing birds were still there, animated little ghosts singing and chasing each other through the trees, invisible to my eyes but still a part of the forest.

I now think of the Alakai when I read about the West Nile virus, because it serves as a cautionary tale. In an age of global commerce, we are transporting and commingling plants and animals on a scale never before seen in earth's history. Whether for the pet trade or the horticulture trade or in the service of agriculture and manufacturing, we have broken down the barriers that once separated the flora and fauna of different continents. One such shipment of birds brought West Nile virus to our shores. To date, the virus has been detected in more than 60 species of North American birds. Members of the crow family appear to be especially sensitive to the disease, with many recorded deaths, but I can think of no reason to assume that other birds may not be just as vulnerable. A dead crow is, after all, fairly conspicuous; if kinglets are equally susceptible, how likely is it that we will find their tiny corpses?

Perhaps the virus will die out, or perhaps it will have only a negligible impact on birds other than crows and jays. But two decades ago scientists assumed the birds of the Alakai were in no immediate danger—an assumption that proved to be horribly incorrect. ■

Suggested Reading

Shiela Conant, H. Douglas Pratt, and Robert J. Shallenberger. 1998. "Reflections on a 1975 Expedition to the Lost World of the Alakai and Other Notes on the Natural History, Systematics, and Conservation of Kauai Birds," *The Wilson Bulletin* 110: 1–22.

JACK JEFFREY

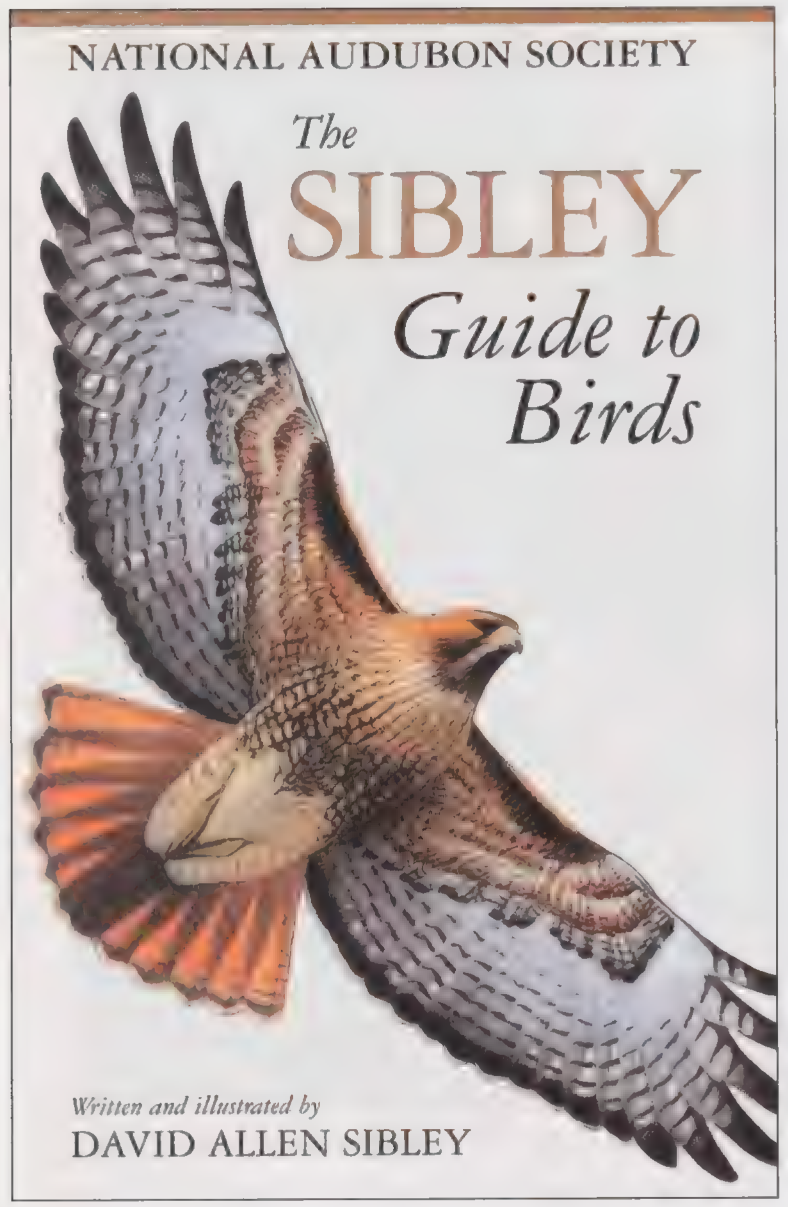
Although the Alakai Swamp looks pristine, many of its birds are now extinct. "At times I imagined the birds were still there, animated little ghosts singing and chasing each other through the trees, invisible to my eyes but still a part of the forest."

A TALE OF TWO FIELD GUIDES

Two long-awaited field guides hit the market simultaneously. How do they stack up against each other and the many guides that preceded them?

BY KEVIN J. MCGOWAN

Ask most people how they got started in birding and they'll probably point to a single seminal event or a special mentor who inspired them at just the right moment. For me it was different. What launched me on my long, happy road to becoming a birder was a field guide my parents gave me for Christmas when I was 13. Of course, at some level, I'd been interested in birds and other wildlife for years. Certainly I knew more about birds than any of my family, friends, and teachers, and I could identify the House Sparrows, European Starlings, Blue Jays, and chickadees that came to our feeder. But when my parents gave me the *Golden Guide to the Birds of North America*, by Robbins, Brunn, Zim, and Singer, it changed my life. I was shocked when I thumbed through it for the first time. Instead of a picture of "The Duck," I saw pictures of about 50 different kinds. I knew about sparrows, but I had no clue that so many species existed. And look at all the different hawks!



The book was incredible, and it opened my eyes to an amazing number of different aspects of birds and biology. I read it systematically from beginning to end, and then I kept it on the nightstand beside my bed and browsed it almost every night for the next few years. I knew it backward and forward—every illustration and description. In my eyes, the Golden Guide was just about perfect.

But of course, it wasn't. It turns out that some of the illustrations were a little . . . well . . . wrong (Incredible!). And some plumages were not even illustrated. It was hard for me to believe that the book that introduced me to the complexity of biodiversity actually lacked detail.

During the past 30 years, numerous new guides and revisions of old guides have been published, but none of them really stacks up to my childhood perception of that first Golden Guide. I still cherish the idea of having one "perfect" field guide on my bedside table again, and I tend to buy all the new field guides. But I usually end up leaving them on my book shelf, to be looked at maybe once or twice a year.

It was with great excitement, then, that I anticipated the field guides being produced by two of the most eminent birders in North America: Kenn Kaufman and David Sibley. Both are accomplished field birders and talented bird artists, and both spend large amounts of time in the field and looking through museum collections, searching for new field marks rather than just regurgitating things other people have discovered. Birders had a brief taste of the Sibley guide—an article in *Birding* magazine about how to distinguish between the newly separated sharp-tailed sparrows—that left everyone drooling for the entire book. And if Sibley's book had that much detail and new information, just think about all the great things that Kaufman's book would contain.

So we waited excitedly . . . and waited . . . and waited. But now the waiting is finally over. Are the new guides the be-all and end-all we were hoping for—the perfect guides to replace my fond childhood memory of the Golden Guide at my bedside? Well, not exactly. Are they excellent guides that will teach you things you didn't know before? Absolutely! Should you run right out and buy them both? In my opinion, definitely yes.

Perhaps it's unfortunate that the guides came out at the same time—but then again, maybe it isn't. Although most people expected them to be competing guides, in fact they are complementary: the Kaufman guide is for beginners, the Sibley guide for advanced birders. Don't get me wrong. Excellent birders can learn something new from Kaufman's guide, and beginning birders can learn much from Sibley's guide. But beginners will find Kenn Kaufman's book far more inviting, and experienced birders will find more of the feather-splitting detail they're looking for in Sibley's book.

It's clear that several different audiences exist for bird guides. Roger Tory Peterson started it all by condensing the complexities of bird identification into simple shadow illustrations that allowed beginners to identify distant birds with confidence. But this system has its limitations. Not all species of birds are easy to identify. A dowitcher on a mudflat may be an easy call, but which dowitcher is it—Short-billed or Long-billed? At first, you may be happy just to distinguish a dowitcher from a snipe or a yellowlegs. But as the years go by, this becomes increasingly unsatisfying, and the ability to pick the two species apart becomes a pressing need.

During the past 15 years or so, as birders became more and more sophisticated, the National Geographic guide became the book of choice for most. If you saw birders consulting a Peterson or, increasingly rarely, a Golden Guide, you knew that they were beginners. The "real" information you needed to identify birds just wasn't there. In fact, once you've reached the point where you can go birding without a book in your pocket, you're pretty much done with the Peterson or the Golden Guide. But, somehow, those books have not disappeared. Indeed, they remain popular with beginning birders, and with good reason. Although the minutiae of the shape of tertial edging and the extent of primary extension are important in distinguishing some species, such detail can overwhelm beginners. If you are more interested in knowing whether the bird you're seeing is a White-throated or a White-crowned sparrow than which race of White-crowned Sparrow it is, you'll probably want good old Roger Tory Peterson at your side.

So the need for different guides for beginners and advanced birders remains strong. And now, we have an excellent new version of each. Let's start by looking at Kenn Kaufman's new guide. What's different about it? First, it's made up of photographs, not paintings. Of course, using photographs in field guides is nothing new. A debate has long raged in the birding community about which kind of images—photographs or paintings—are more effective in field guides. Birders who prefer photographic guides cite the inability of even the best artists to capture completely the subtleties of shape and "jizz" that are so important for identifying some species. Those who prefer paintings point out that an illustrator can portray a bird in the perfect pose to show all of its relevant field marks. Photographs are limited by the angle of the bird to the camera, the problems of portraying a three-dimensional object in two dimensions, the distortions caused by variations in lighting or the type of lens

KAUFMAN FOCUS GUIDES
A New Focus on the Field
BIRDS of North America
"Wow! Bird identification made easy."
Frank Gill, director of science, National Audubon Society
Kenn Kaufman

Two of America's top birders, David Sibley and Kenn Kaufman, each created a brand new field guide—at the same time. Is there room for yet two more guides to this continent's birdlife?

BHL

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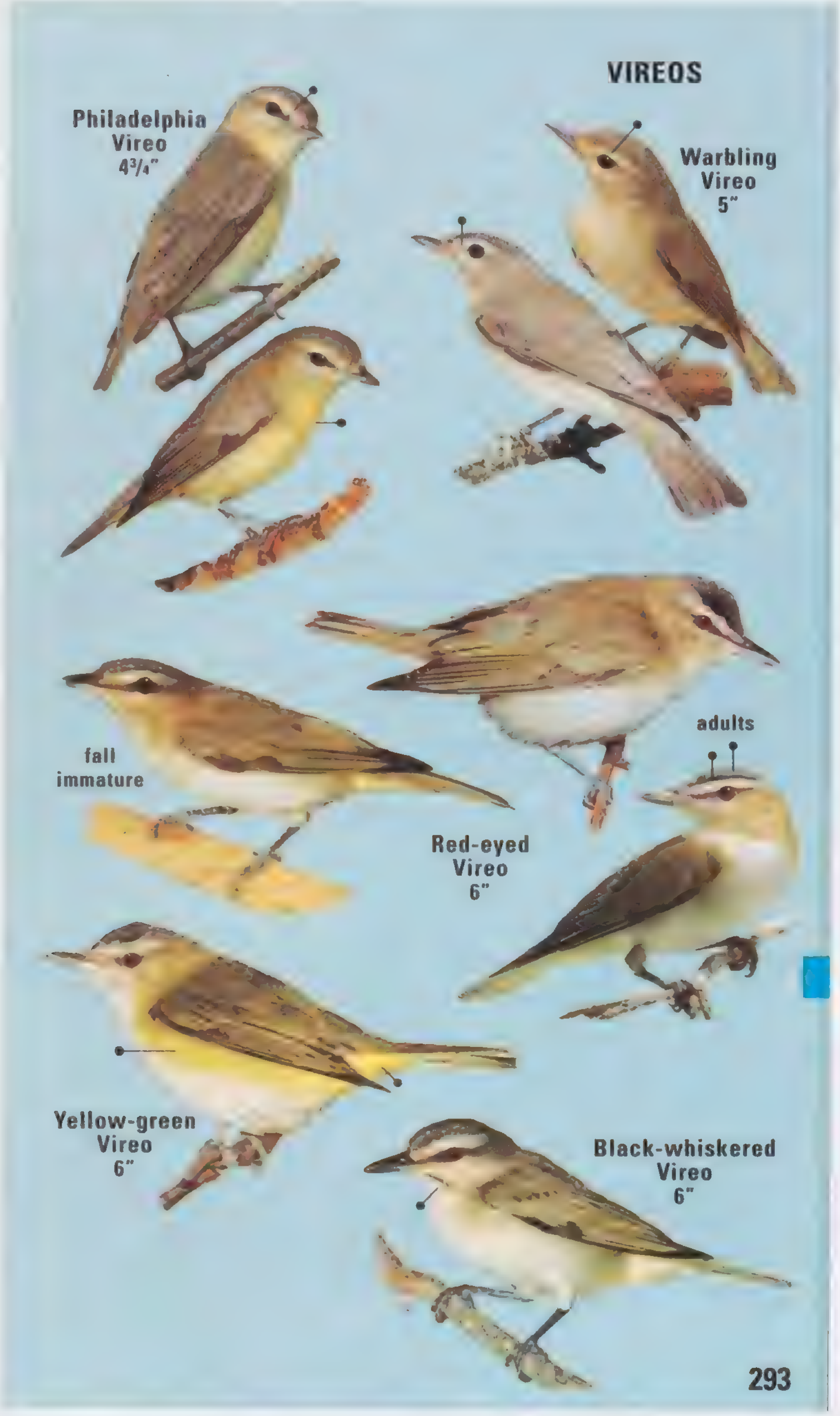
used, and the actual field marks the bird was displaying when the photograph was taken.

Kaufman's book is the first photographic field guide I've seen that is effective for teaching people how to identify birds. What distinguishes it from previous photographic guides is his use of manipulated or enhanced photographs. Using computer technology, he aligned the bird images in a consistent direction, corrected for color inconsistencies, changed contrast, and more. The photographs are not just good and sharp but actually show the field marks in question. The most important difference is that Kaufman presents several photographs of each species. Often these multiple photographs illustrate not different plumages but the same one from different angles. This realistic guide recognizes that you need several examples to illustrate what you're likely to see in the field.



This plate from Kaufman's new field guide shows two images of adult Red-eyed Vireos in typical plumage. Why use two photographs where one would suffice? Because they illustrate how different the same bird can look if its posture or the attitude of its feathers are different.

Take the Red-eyed Vireo, which Kaufman illustrates with three photographs. One depicts a dark-eyed immature individual to point out that these birds have dark brown (not red) irides at that age. The other two photographs both illustrate adults in "typical" plumage. Why use two where one would suffice? Because they illustrate differences in posture and "attitude" of the birds, which can make them look quite different. One is rather fluffed and round-looking; the other is sleeked down and facing the camera at an angle that makes it look somewhat foreshortened and flattened. Although obviously the same species, the two birds look remarkably different, and this is a vital lesson. A bird's shape and posture can provide important identification clues, but much of the difference you see between individuals is simply the result of the bird's position in relation to the observer and the extent that its feathers are elevated.

Overall, Kenn Kaufman's guide is a superb book that I highly recommend to anyone who's interested in birds. It is also a convenient size, 4.5 x 7.5 inches and just over 0.75 inches thick. It is truly a "field guide" that can fit in the back pocket of all but the tightest jeans—a book made to be carried when you go hiking to see birds. Many field guides these days (including Sibley's book) have swelled to dimensions that make them difficult to carry in the field, but some of them make the effort worthwhile.

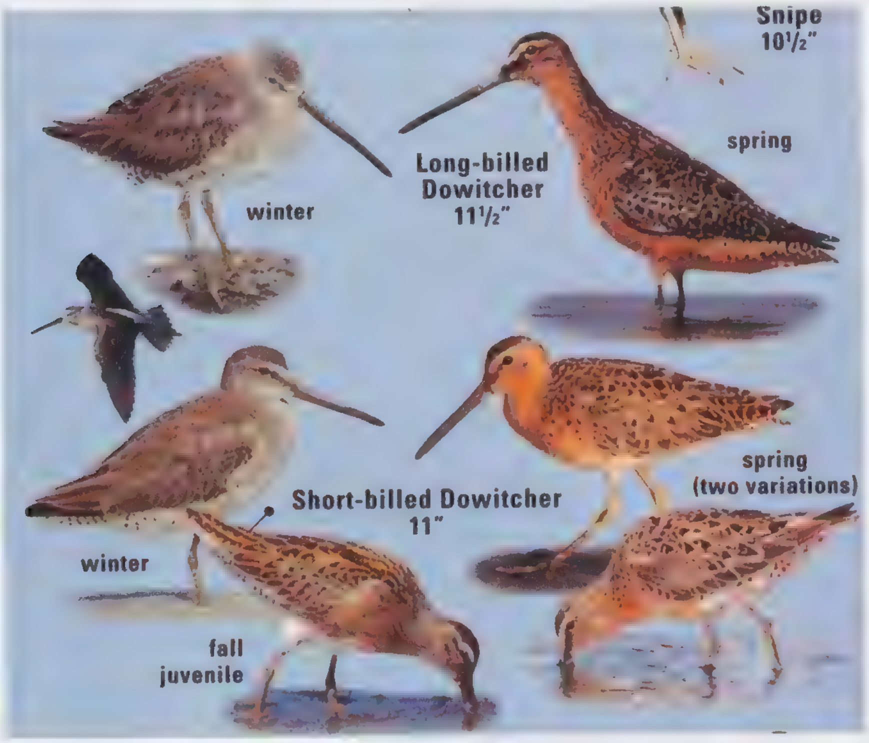
What are the limitations of Kaufman's guide? For starters, it doesn't illustrate all of the identifiable plumages of every species. This book won't help birders interested in picking apart the two dowitcher species, for example. The two species are easiest to distinguish in their juvenal plumage (the first set of feathers held by birds in the year they were hatched). Juvenile Short-billed Dowitchers have tiger-striped tertials, whereas the tertials of juvenile Long-billed Dowitchers are gray and unmarked. The book has a nice photograph of a juvenile Short-billed Dowitcher but not a corresponding picture of a Long-billed Dowitcher.

Despite having numerous illustrations of each species, the limited format means that some

RICK AND NORA BOWERS

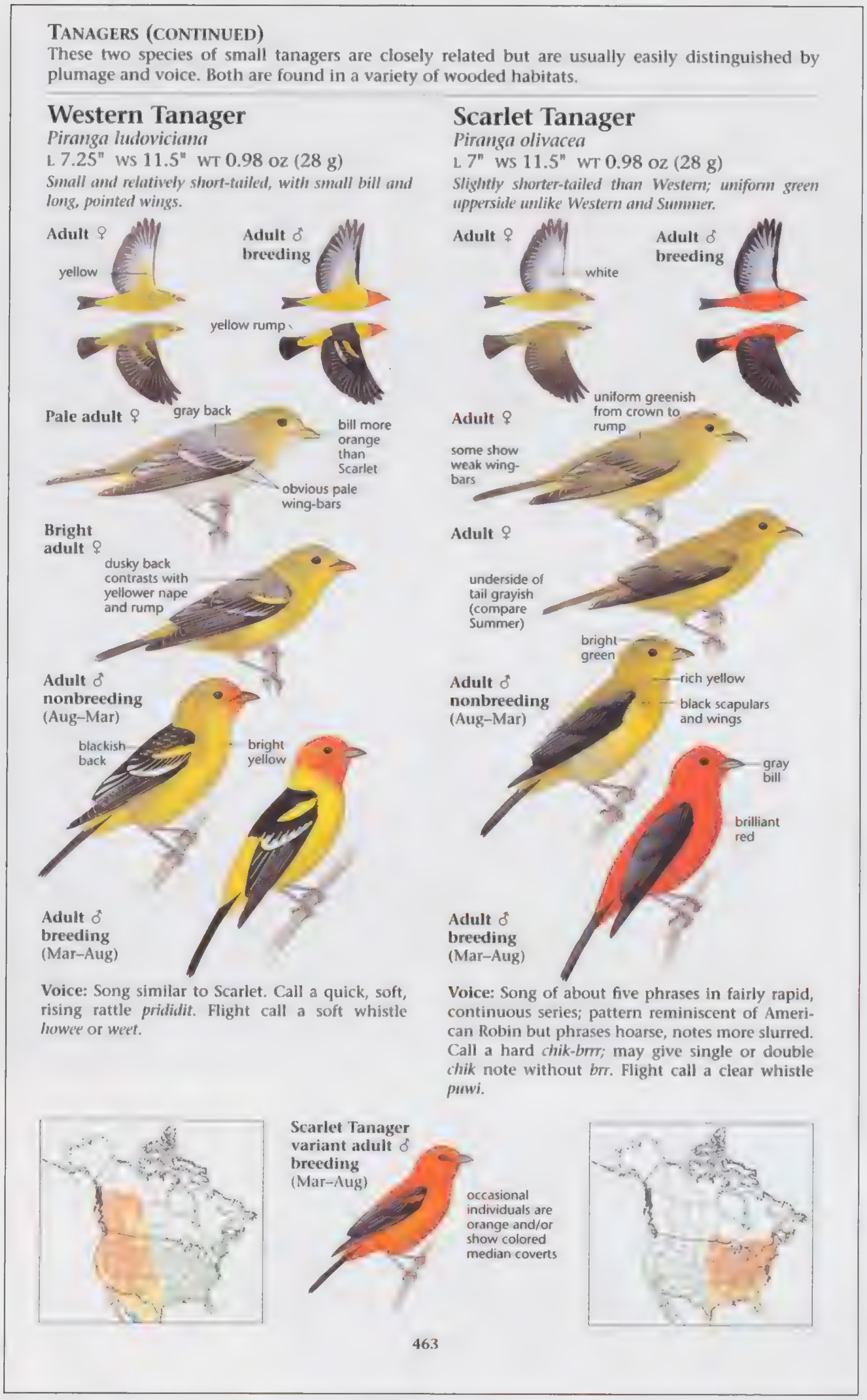
photographs are so small that the points Kaufman is trying to illustrate get completely lost. Look at the juvenile Great Blue Heron and see if you can see any of the characters that distinguish it from an adult.

A third annoyance is the way that photographs of similar-looking species are labeled. Take the crows. Admittedly, the different species of crows don't look much different: they're all large, completely black birds. In point of fact, though, they do have little subtleties that set them apart. The Kaufman guide shows photographs of the three most confusing species (American, Fish, and Northwestern crows) but fails to point out which photograph depicts which species. Unlike paintings, which might represent one or the other of the species or all of them combined, the photographs only depict one species each. Why not label them accordingly?



My last quibble with the Kaufman guide is the order in which the species are presented. I admit that I might not represent the majority on this issue. I know far more than the general public about the relationships of birds. I know what order that birds are "supposed" to be in, and I find it hard to locate birds in guides that don't put them in the cur-

Kenn Kaufman (above) is a prolific author and one of America's top birders. His new guide is currently the best available for beginning birders. But advanced birders may be disappointed with some of the features it lacks. At left, Kaufman has a photograph of a juvenile Short-billed Dowitcher but not a corresponding picture of a juvenile Long-billed Dowitcher—a significant shortcoming considering that these species are easiest to tell apart in this plumage.



TANAGERS (CONTINUED)

These two species of small tanagers are closely related but are usually easily distinguished by plumage and voice. Both are found in a variety of wooded habitats.

Western Tanager

Piranga ludoviciana

L 7.25" WS 11.5" WT 0.98 oz (28 g)

Small and relatively short-tailed, with small bill and long, pointed wings.

Adult ♀
yellow

Adult ♂ breeding
yellow rump

Pale adult ♀
gray back
bill more orange than Scarlet
obvious pale wing-bars

Bright adult ♀
dusky back contrasts with yellower nape and rump

Adult ♂ nonbreeding (Aug–Mar)
blackish back
bright yellow

Adult ♂ breeding (Mar–Aug)

Voice: Song similar to Scarlet. Call a quick, soft, rising rattle *prididit*. Flight call a soft whistle *howee* or *weet*.

Scarlet Tanager

Piranga olivacea

L 7" WS 11.5" WT 0.98 oz (28 g)

Slightly shorter-tailed than Western; uniform green upperside unlike Western and Summer.

Adult ♀
white

Adult ♂ breeding

Adult ♀
uniform greenish from crown to rump
some show weak wing-bars

Adult ♀
underside of tail grayish (compare Summer)

Adult ♂ nonbreeding (Aug–Mar)
bright green
rich yellow
black scapulars and wings

Adult ♂ breeding (Mar–Aug)
gray bill
brilliant red

Voice: Song of about five phrases in fairly rapid, continuous series; pattern reminiscent of American Robin but phrases hoarse, notes more slurred. Call a hard *chik-brrr;* may give single or double *chik* note without *brr*. Flight call a clear whistle *puwi*.

Scarlet Tanager variant adult ♂ breeding (Mar–Aug)
occasional individuals are orange and/or show colored median coverts

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David Sibley (facing page) spent a decade working on his field guide, creating the plates and writing the text. The results are impressive. The book is a welcome new reference work for serious birders, but most people will find it too heavy and bulky to carry in the field.

ANTHONY BARBOZA

rent "systematic" order (with the most closely related species beside each other) and instead place the species that look the most alike together. I never use the index of a field guide. I generally don't need to. I know where things fit in a standardized taxonomic order, and it is far faster for me to skim through the book to the appropriate point than to look up a bird's name in the index.

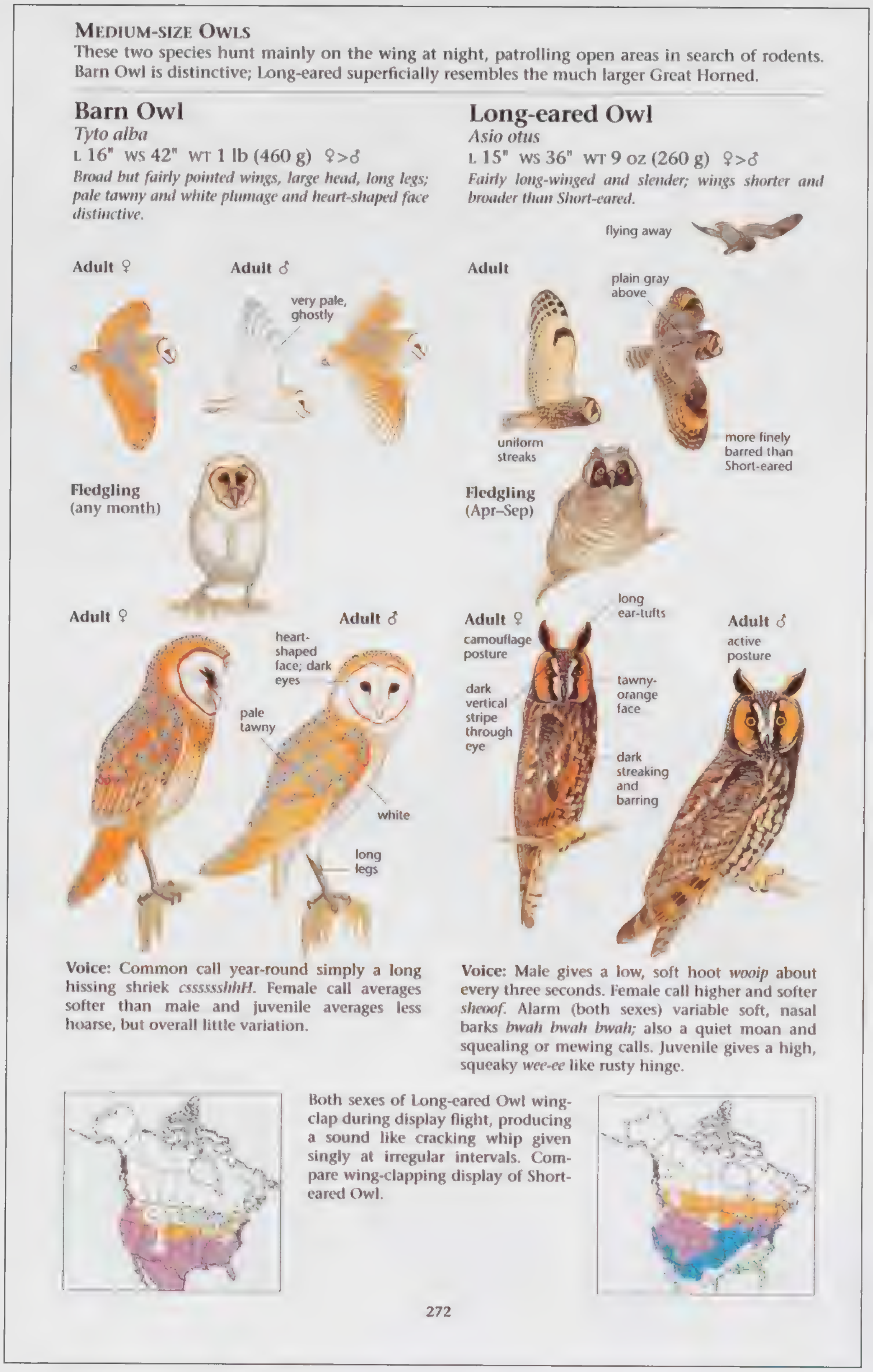
An example is the American Coot. Coots swim around on the surface of ponds much like ducks. But they don't have flat duck bills. Their bills are more chickenlike and pointed. The first time I saw some coots, I was amazed to learn that they are related to rails and cranes and not at all to ducks. The second time I saw them, however, I instantly recognized them for what they were, and I never looked for them in the duck section of the guide again. But in a reference book for people who don't know a grebe from a merganser, I suppose it does make sense to put birds together that look similar. A pictorial table of contents in the front of Kaufman's book helps guide people to the right section of the book to find what they're looking for.

The *Sibley Guide to Birds* is an altogether different animal, written with the advanced student in mind. Sibley attempts to show all the plumages of all the species of birds that regularly occur in North America north of Mexico and to show examples of all the distinctive regional populations of birds that vary geographically. For many species, this book provides the information you need to determine not only the bird's species but also its age, sex, and place of origin.

Obviously, to accomplish all that, a book has to be larger than the norm—and big it is. Measuring 9.5 x 6.25 inches and 1.5 inches thick, this book won't fit in most pockets. It is more of a handbook than a field guide—the kind of book you keep in your car to check things out after you're finished looking at them. But that's okay. The birders who will make the best use of it generally don't carry a field guide with them every second of the day anyway.

The arrangement of the book is also different from most field guides. Instead of having text on one page with illustrations on the facing page, the information for each species is on one page. The illustrations fit in between the introductory text, voice descriptions, and the maps. In general, only two species are included on a single page, and frequently a single variable species takes up the whole page by itself, or even two pages in really variable species such as the Red-tailed Hawk and the Herring Gull. The Dark-eyed Junco takes up three-and-a-half pages.

Sibley's paintings represent several individuals perched in characteristic poses, with smaller illustrations of the bird in flight above. The most important field marks are indicated by arrows connected to the text that describes them. Kaufman also uses arrows, but you have to go through the text on the facing page to find exactly what you should be looking at.



MEDIUM-SIZE OWLS

These two species hunt mainly on the wing at night, patrolling open areas in search of rodents. Barn Owl is distinctive; Long-eared superficially resembles the much larger Great Horned.

Barn Owl

Tyto alba

L 16" WS 42" WT 1 lb (460 g) ♀>♂

Broad but fairly pointed wings, large head, long legs; pale tawny and white plumage and heart-shaped face distinctive.

Adult ♀

Adult ♂

very pale, ghostly

Fledgling (any month)

Adult ♀

Adult ♂

heart-shaped face; dark eyes

pale tawny

white

long legs

Voice: Common call year-round simply a long hissing shriek *csssssshhH.* Female call averages softer than male and juvenile averages less hoarse, but overall little variation.

Long-eared Owl

Asio otus

L 15" WS 36" WT 9 oz (260 g) ♀>♂

Fairly long-winged and slender; wings shorter and broader than Short-eared.

flying away

Adult

plain gray above

uniform streaks

more finely barred than Short-eared

Fledgling (Apr–Sep)

Adult ♀

camouflage posture

long ear-tufts

Adult ♂

active posture

dark vertical stripe through eye

tawny-orange face

dark streaking and barring

Voice: Male gives a low, soft hoot *wooip* about every three seconds. Female call higher and softer *sheoof.* Alarm (both sexes) variable soft, nasal barks *bwah bwah bwah;* also a quiet moan and squealing or mewing calls. Juvenile gives a high, squeaky *wee-ee* like rusty hinge.

Both sexes of Long-eared Owl wing-clap during display flight, producing a sound like cracking whip given singly at irregular intervals. Compare wing-clapping display of Short-eared Owl.

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Sibley attempts to show all the plumages of every bird species that occurs regularly in North America as well as providing examples of regional variations within species. This left little room for text about behavior or habitat.

Kaufman does, however, put the most important points in italics so they're easy to find.

It's interesting to compare the field marks pointed out by arrows in different books. Take the American Robin. In the fourth edition of Peterson's *A Field Guide to Birds,* the arrows point to the bright red breast and the dark gray back of an adult male and to the speckled breast of a young bird. Kaufman points only to the speckled breast of the juvenile, while Sibley points at the dark nape and upper back and the limited white on the throat of the Atlantic Canada form. For Cedar Waxwing, Peterson points to the crest on the head, the white undertail coverts, and the yellow tip of the tail. Kaufman points to the undertail coverts and tail tip, too, but he doesn't point to the crest (possibly because it is on the page entitled "Crested Birds"). Sibley uses 11 arrows pointing to a number of characters, but not one of them points at the crest! Different audiences need to be directed to different field marks.

The paintings in general are excellent. Sibley captures much of the essence of each species, and he does it in a less-detailed style than most field guide illustrations. In fact, the illustrations are more cartoonlike than we have come to expect in modern field guides. I've heard a few negative comments about this spare style, but I think it serves its function well. Where feather edging and feather shape are important, Sibley shows them in the necessary detail.

One unfortunate problem appears to have crept into the book during printing. In virtually all of the paintings in which Sibley uses orange or ochraceous colors, they are far too bright. As a result, many subtle characters look like bright, obvious field marks.

Although they're excellent, Sibley's paintings still suffer from the usual limitations of paintings: the outline is still translated through the eyes of the artist and therefore may not exactly match the way a given bird appears to you. I personally like paintings and photographs for different purposes. If I'm puzzling over some unusual bird, I like to look at both good paintings and photographs to help me make a positive identification.

At the beginning of each section of birds (usually families, but sometimes other groupings), Sibley has a page or two of illustrations depicting all of the species in the group, one picture per species. This feature lets you look at the whole range of species at a glance, which can be useful for discovering the comparative differences that get lost when a bird family is spread out across numerous pages. Size and shape are the first features that jump out from these pages, but color and pattern come through too. Because Sibley limits himself to only one illustration per species, he shows different forms for different groups. In general, he illustrates forms that are difficult to identify rather than the distinctive male breeding plumages.

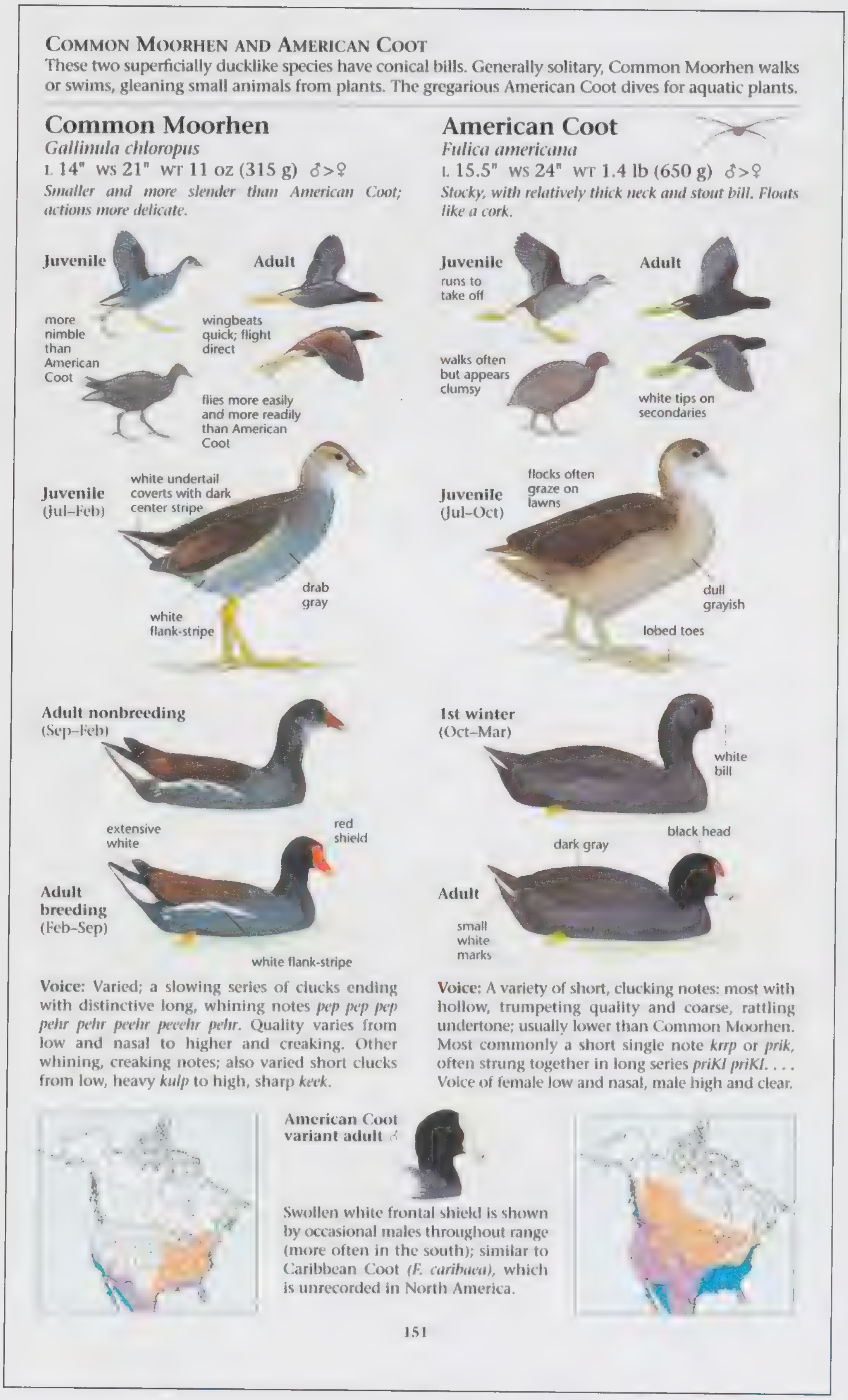
Despite the great detail of the book's identification characters, it is surprisingly limited

ANTHONY BARBOZA

in other information. Habitat usually receives only a single comment; behavior is rarely mentioned. In some cases, additional information on a species is placed apart from the species account, in the family introduction or at the top or bottom of the page in the sections relating to both species on the page, making it difficult to find. Oddly, one consistently missing feature is a reference to the origins and normal ranges of rare birds. The only information provided for the Bahama Swallow, for example, is that it is related to other *Tachycineta* swallows and that it nests in open pine woods. The name is an obvious clue to its origins, but the map might give you the impression that it nests—albeit rarely—all through the Florida Keys and might be expected on any trip there. The origin of Bramblings in North America is less obvious from the name, and the only help we are given is that they are "found in open woods and fields, often with sparrows." Where would you go to look for more information on the species? Is it coming from the south or the north? Asia or Europe? The small green dots that indicate the sightings of Bramblings are scattered across the middle of the continent, and only the two in the Bering Sea help point to a Siberian origin of this species of finch, which is commonly found across northern Eurasia.

The book is large, and although I don't necessarily hold that against it (I'd rather have a large book illustrating all of the forms than a small one that leaves things out), the use of space seems less than perfect. Several friends have complained about the relatively small illustrations and maps, which is especially bothersome because there is so much white space.

David Sibley (above) works on the Barn Owl illustration that later appeared on the "Medium-size Owls" plate (facing page) in his guide. His illustrations were done in a less-detailed style than those in many modern field guides, but they do capture the essence of each species. And where it is important to show feather edging and shape, he does provide the necessary detail.



COMMON MOORHEN AND AMERICAN COOT

These two superficially ducklike species have conical bills. Generally solitary, Common Moorhen walks or swims, gleaning small animals from plants. The gregarious American Coot dives for aquatic plants.

Common Moorhen
Gallinula chloropus
L 14" WS 21" WT 11 oz (315 g) ♂>♀
Smaller and more slender than American Coot; actions more delicate.

American Coot
Fulica americana
L 15.5" WS 24" WT 1.4 lb (650 g) ♂>♀
Stocky, with relatively thick neck and stout bill. Floats like a cork.

Juvenile
Adult
more nimble than American Coot
wingbeats quick; flight direct
flies more easily and more readily than American Coot
Juvenile
runs to take off
Adult
walks often but appears clumsy
white tips on secondaries
Juvenile (Jul–Feb)
white undertail coverts with dark center stripe
drab gray
white flank-stripe
Juvenile (Jul–Oct)
flocks often graze on lawns
dull grayish
lobed toes
Adult nonbreeding (Sep–Feb)
extensive white
red shield
Adult breeding (Feb–Sep)
white flank-stripe
1st winter (Oct–Mar)
white bill
black head
dark gray
Adult
small white marks

Voice: Varied; a slowing series of clucks ending with distinctive long, whining notes *pep pep pep pehr pehr peehr peeehr pehr*. Quality varies from low and nasal to higher and creaking. Other whining, creaking notes; also varied short clucks from low, heavy *kulp* to high, sharp *keek*.

Voice: A variety of short, clucking notes: most with hollow, trumpeting quality and coarse, rattling undertone; usually lower than Common Moorhen. Most commonly a short single note *krrp* or *prik*, often strung together in long series *priKI priKI*. . . . Voice of female low and nasal, male high and clear.

American Coot variant adult ♂

Swollen white frontal shield is shown by occasional males throughout range (more often in the south); similar to Caribbean Coot *(F. caribaea)*, which is unrecorded in North America.

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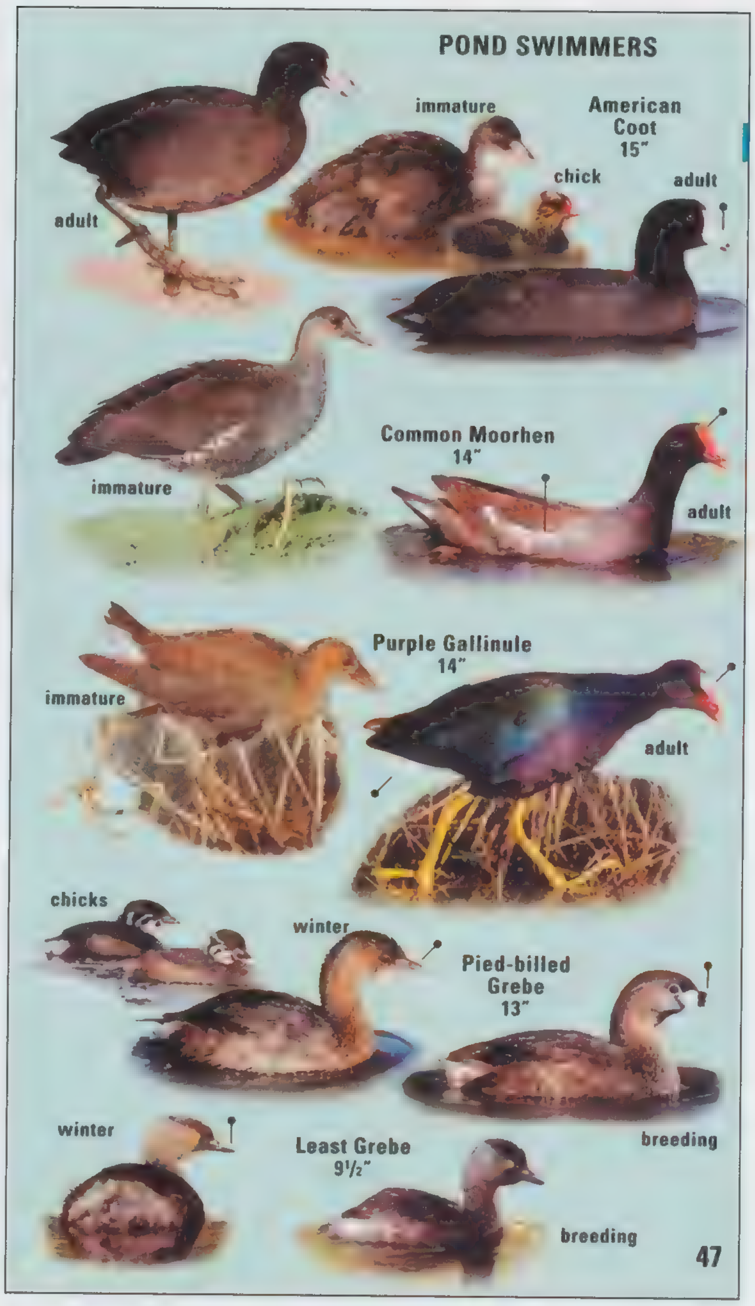

Unlike Sibley's guide, which has American Coot placed with the closely related Common Moorhen (above left), Kaufman's guide (right) has the coot on a plate with similar looking species, two of which are unrelated.

Although I don't necessarily agree with them, I can see their point.

Despite the inevitable shortcomings of both of these books, they are truly excellent works that will probably dominate their respective markets. They both set new standards in field guides that will be difficult to surpass.

So should you go right out and buy these guides? I would say, yes—if you haven't already. If you're a beginner, grab a Kaufman guide as soon as you can. It's light, relatively inexpensive, and extremely useful. If you're a real beginner, you can postpone buying Sibley's guide. It's big, it's more expensive, and it has more information than you can use right now. But if you're an experienced birder (or intend to be one someday), then by all means get Sibley's guide—it's the best compendium of North American birding knowledge available today. Should you buy a Kaufman guide, too? Yes. If you're really serious, the excellent photographs in this guide, presented in such a superbly accessible fashion, make it a super resource for looking up those subtle characters that are hard to define but can absolutely confirm an identification.

Field guides have come a long way since the early 1970s when I started birding. I appreciate the advances, and I look forward to continuing improvements. Still, nothing has appeared yet that will supplant my cherished childhood memory of that old Golden Guide on my nightstand. Perhaps in a few years we'll all have electronic palm-top computers containing all of the photographs, paintings, plumages, and individual variations, along with the latest published information (with sound and video too!) in a package that will fit in your pocket. Maybe then I'll be satisfied. ■

Kevin J. McGowan is curator of Cornell's bird and mammal collections as well as technical editor of this magazine.

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Even in mid-July, Uummannaq Fjord in northwestern Greenland is often choked with icebergs, making boat travel nerve-wracking at best. This past summer, Peregrine Fund researchers attempted to revisit 210 bird nesting sites not surveyed since the early 20th century. Many of the bird colonies had far lower numbers than before and some were empty.

Return to Uummannaq

Text and Photographs
by Tim Gallagher

Nearly a century after Danish ornithologist Alfred Bertelsen began his explorations of northern Greenland, five researchers retrace his steps. What they find is disturbing.

If you had told me in June 2000 that in less than a month I'd be shivering in an open boat, plying my way northward along the coast of Greenland with more than 1,000 miles to go to reach Thule, I'd have said . . . well, something insulting. For the previous three summers in a row I had forsaken the warm comforts of my home in Upstate New York to huddle with my camera—in the icy winds of subarctic Canada, the barren central highlands of Iceland, the storm-swept northwest coast of Greenland. I was ready for a change. I was dreaming of visiting someplace warm: a place where ice is unknown except in mixed drinks, where the coolest winds bring only a refreshing respite from the balmy heat, where researchers rise late and stroll to their study areas clad in

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At each site, we take a GPS reading; check for the presence of birds, the species makeup, and numbers; and record the data. Everything about this place is overwhelming. We barely speak as we motor along in our boat (facing page), a tiny, insignificant speck in this enormous landscape. In the picture at right, famed Greenland explorer Knud Rasmussen (second from left on top row) sits beside Alfred Bertelsen (just to his left).

shorts and straw hats. In short, I wanted to go to the tropics.

So, how did I end up motoring along in an open boat across an ice-choked fjord in northern Greenland, clad in all the high-tech Arctic gear I own and still freezing? It all started with a tantalizing e-mail I received from Kurt Burnham, manager of The Peregrine Fund's Arctic research program. He mentioned that he would soon be embarking on a little boat trip along the west coast of Greenland, and he had room for one more person. He and three other researchers would be checking a huge study area containing 210 known bird sites—seabird colonies, falcon nests, tern and eider islands—all of which had been documented in meticulous detail early in the 20th century by Alfred Bertelsen, a Danish physician who spent most of his life in Greenland.

The idea was intriguing. What would it be like to revisit these sites almost a full century after Bertelsen began his work there? What might we learn about the present health of this spectacular Arctic ecosystem at the beginning of the 21st century? As an afterthought, Kurt added that this was a once-in-a-lifetime opportunity. That was the clincher.

"I'll be there. See you in Uummannaq," I said, barely realizing what the words meant as I hit the computer key, sending my e-mail reply irretrievably into cyberspace.

13 JULY 2000; BASE CAMP; UUMMANNAQ FJORD, GREENLAND: From a distance, our camp is invisible, hidden in a massive cliff running several miles along the island and rising nearly 1,000 feet behind us, disappearing in a dense fog. But get closer and a narrow grassy area takes shape, some 75 feet above the water. There we stand, huddled before the cook stove with fresh coffee brewing. Behind us, our tents lay nestled in various nooks among the rocks, as sheltered from the elements as possible. We have piled rocks on top of every tent stake—a necessary measure to keep our things from blowing off the cliff the next time a strong wind comes screaming through, as we know it will.

With me are Kurt Burnham; Bill Burnham, president of The Peregrine Fund and Kurt's father; Jack Stephens, a weather forecaster at Thule Air Base (not a bad person to have along on a trip like this); and Cornell professor emeritus Tom Cade, founder of The Peregrine Fund and former research director at the Lab of Ornithology. For Tom, this journey has special significance. He had first seen Alfred Bertelsen's Greenland study mentioned in the bibliography of Finn Salomonsen's three-volume *Birds of Greenland.* That was in the early 1950s when Cade was a graduate student.

The Inuit use dogs to pull their heavy wooden sledges (above) during winter. But as soon as the snow and ice melt, the dogs are useless to them. Many are turned loose on islands to fend for themselves (facing page), making it impossible for ground-nesting birds to raise young successfully. These islands, which once had numerous nesting terns and eiders, are now devoid of them.

Bertelsen's article—complete with a map of the Uummannaq District with the bird sites marked—had appeared in 1921 in a Danish journal, *Meddelelser om Gronland.* Cade thought how interesting it would be to return to Bertelsen's study area someday and see how much the bird numbers and species makeup had changed during the intervening years. Now, at age 72 and retired, he is fulfilling a half-century-old dream.

By any standard, Alfred Bertelsen was a remarkable man. As a young Danish physician in his early twenties, he joined the Greenland Literary Expedition (1902-04)—an ambitious attempt to explore the west coast of Greenland and study the languages and customs of the indigenous people, the Polar Inuit.

The expedition, led by famed explorer Ludwig Mylius-Erichsen (who would perish on a subsequent Greenland expedition in 1907), spent nearly two years living with a group of Inuit on the shores of North Star Bay. It's remarkable to think that this was just 84 years after British naval captains John Ross and Edward Sabine first visited this area. The Inuit who lived there at that time led a Stone Age existence, entirely cut off from the rest of the world by ice and frigid water. They had no boats of any kind or any knowledge of them and were certain that the two British ships had flown down to them from the moon. They believed they were the only humans on Earth and that the rest of the planet was covered by ice.

Bertelsen soon after settled in Uummannaq, a fishing and hunting settlement a couple of hundred miles from Disko Bay up a spectacular fjord lined with snow-capped cliffs and peaks. He spent several decades there, traveling to the remote villages of the area, treating Inuit patients. Behind his home—still occupied by the current doctor—stands another small house that served as his hospital for many years. But Bertelsen was more than a physician. He was also a capable ornithologist and spent decades documenting the bird life of the vast Uummannaq District. He painstakingly mapped the locations of every bird site he could find in the hundreds of square miles he regularly covered.

And now we are here in the summer of 2000, carrying a copy of his map as we travel from site to site. At each location, we take a

GPS reading and note the presence or absence of birds and the approximate numbers, which we can compare with Bertelsen's original surveys.

13 JULY 2000; UUMMANNAQ FJORD:

We head southwestward to check 26 bird sites that Bertelsen recorded along the Qarajaqs Isfjord. Lofty cliffs rise on both sides of us, like a primeval Grand Canyon, dusted with snow and ice where they vanish into low-lying clouds and fog. Occasionally a deafening crack and rumble echoes along the fjord as somewhere in the distance another battleship-sized iceberg breaks free of a glacier and plunges into the frigid water. Everything about this place—its scale, its raw beauty, its solitude—is overwhelming. We barely speak as we motor along in our boat, a tiny, insignificant speck in this enormous landscape.

Reaching the mouth of Qarajaqs Isfjord, our way is blocked by an impenetrable wall of icebergs. We cruise back and forth looking for an entryway, but it's hopeless. These icebergs have been driven here by the prevailing wind. It's possible that sometime in the next week or two, a strong wind will blow in the opposite direction, flushing the icebergs out of here and dispersing them through the larger fjord. But we don't have time to wait it out. Bill says we'll have to return in a few days with a helicopter to complete the survey.

We head back north, checking more accessible sites near Uummannaq. We pass one enormous cliff-face that, according to Bertelsen, once held a great colony with more than half a million pairs of Thick-billed Murres, as well as numerous Razorbills and kittiwakes. Now it is silent. We see only orange lichens growing where bird guano once stained the rocks and some long-abandoned murre and kittiwake nests. Although we see a few hundred Northern Fulmars in the general area, none of the other species is present. What's particularly bothersome is that this is not the first Bertelsen site that was a disappointment—just the most dramatic. Many of the sites checked earlier on this survey have had significantly fewer birds present and much less species diversity than Bertelsen reported.

This seems to be particularly true of the sites near human settlements. A lot of the small islands that once held tern colonies and numerous nesting eiders and other waterfowl are now overrun with hungry dogs during the bird breeding season, so no chicks or eggs can possibly survive on them. These dogs, which are used by the Inuit to pull heavy wooden sledges during the winter, are useless once the ice and snow melt. Dozens of them are turned loose on these islands to fend for themselves each summer.

Though this might explain why so few ground-nesting birds can be found near settlements, why are cliff-nesting species also vanishing? Did something happen to the small fish population on which they depend for food? Has this area become polluted or contaminated in some way? Or could hunters from nearby villages somehow have exterminated an entire half-million-pair colony? It's mind-boggling to speculate.

Some of Bertelsen's falcon nest sites also appear to be vacant, though we do find some new nests. To locate them, we typically drive the boat to the base of a likely looking cliff and fire a rifle. As the gunshot echoes along the cliff face, a falcon usually flushes from its nest, has a look around, and then goes right back to its nest ledge with minimal disturbance. At one cliff today, a Peregrine Falcon flushes from a cliff when Kurt fires and is quickly joined by her mate, which soars in high above us. But the best moment of the day comes later when we spot a pair of white Gyrfalcons—the palest I've ever seen—perched atop a lofty palisade. By the time we head back to camp at 10:00 P.M., we have visited 24 of Bertelsen's sites; not a bad day's work.

14 JULY 2000; BASE CAMP; UUMMANNAQ FJORD: We awake to the howl of gale-force winds rushing through the fjord, driving rain and sleet fiercely down on us. But offshore we hear another, stranger sound—a great *whoosh,* repeated every few minutes. It is a massive fin whale, more than 60 feet long, spouting spray from its blowhole as it makes its way slowly through the churning icebergs in the fjord. It passes within a couple of hundred yards of camp, completely unfazed by the weather.

Some areas are choked with icebergs, making it necessary to survey nest sites by helicopter. In less than three hours, we visited 26 of Alfred Bertelsen's bird sites. Below, a chopper's eye view of a gull colony.

According to Jack Stephens—who has been batting 1,000 on his weather predictions so far—the storm will last all day and probably all night as well. Each day, he sets up a mini–weather station—a satellite telephone hooked up to a computer—and downloads the latest images of emerging weather patterns. It's amazing. He's basically using the same radar and satellite data he would use in his office at Thule Air Base.

Obviously, the day is shot for checking nest sites. Bill decides that we should take the boat across to Uummannaq, which is not a long distance away but should be an interesting trip in this storm. There, we can make arrangements to hire a helicopter and look around the settlement.

After battening down the camp as well as we can, we slither down the cliff and climb into the boat. We have to jockey around with icebergs in our tiny cove, pushing them with boat hooks and even driving one out with the bow of the boat, before we can get into the open fjord. Wind-driven waves and chop as well as icy rain hammer us all the way across, and there's nowhere to hide in this boat.

15 JULY 2000; UUMMANNAQ: The wind and rain have stopped, but it is still cloudy and overcast with the threat of more bad weather. Still, according to Jack, we should have no problem making our helicopter survey this afternoon. It is 2:00 P.M. as we climb aboard the chopper. Kurt talks his way into the front seat beside the pilot, where the mechanic usually sits. He holds Bertelsen's map in front of him and will point the way for the pilot and take GPS readings at each site. I'm happy to sit at the back on the left side. I've never been one to jump deliberately into the front seat of a roller coaster.

Even wearing the ear protectors the mechanic handed us, the noise is beyond deafening when the motor fires up. Then we're off, over the edge of the cliff and skimming across the fjord, like a fulmar with a rocket engine strapped to its back. And then we're rising—to cliff-top level and beyond, taking minutes to pass over an area that had taken us hours to cross in the boat.

Qarajaqs Isfjord, where we had turned back a few days earlier, is still wall-to-wall icebergs, but now

Our helicopter pilot, a young Norwegian named Tore (above right), takes us right up to each nest site, allowing us to count birds and take a GPS reading before roaring off to the next site, like a fulmar with a rocket engine strapped to its back. At left, Peregrine Fund founder Tom Cade records nest data from the helicopter flight in his field notebook.

The farther we travel from human settlements, the more nesting birds we see. Below, a thriving bird colony with numerous Iceland Gulls and other species. The bird sites immediately adjacent to villages seem invariably to have the fewest birds present.

we skim easily over it, the shadow of the helicopter standing out sharply in black against the blue-white glacial ice. We fly to the first Bertelsen site, where Iceland Gulls wheel back and forth against a rugged cliff face. The pilot, a young Norwegian named Tore, hangs in front of the cliff as Kurt takes a GPS reading and Tom and Bill note the numbers of birds present. I snap away with my camera at the cliff, at my friends on board, and at the icebergs below. Then Tore turns hard left, flying the chopper sideways and plunging downward as he moves away from the cliff and roars to the next site. (He's a good cab driver, and he knows the timer is running.) As we pass over a small island, several ptarmigan flush below us, their white primaries flashing against the dark rocks and vegetation.

Later I see a Gyrfalcon flush from a cliff far beneath me and fly swiftly across the ice. I shout to everyone to look, but it's impossible to hear anything in there. A couple of hours later, we're flying back up the main fjord toward Uummannaq. In less than three hours, we've checked 26 of Bertelsen's sites and found a few new sites that either didn't exist in his time or perhaps would have been difficult to find without a helicopter.

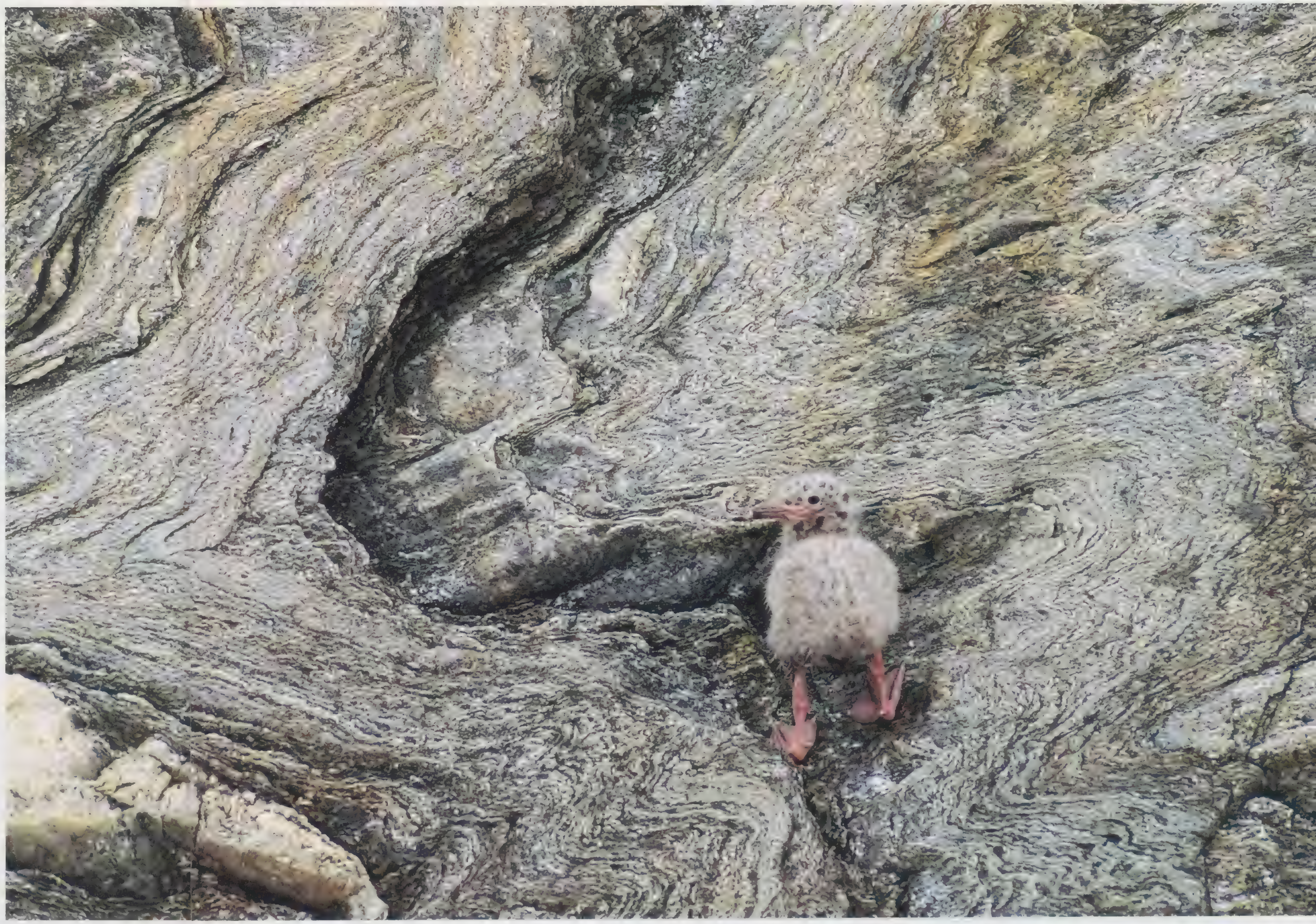
Back at Uummannaq, we eat dinner, and Jack checks the weather situation. He predicts that a major windstorm will strike at about 6:00 the next morning. Bill decides the best course of action is to do an all-nighter, heading north to check several out-of-the-way bird sites. Luckily (or maybe unluckily) it stays light 24 hours a day in the Arctic, so night is not a hindrance to determined researchers.

Later that evening, on the way north, two fishing boats accompanied by a smaller skiff emerge from another fjord. The skiff races ahead of the other boats. Suddenly a massive fin whale rises before them, blowing spray from its blowhole, and is met with a fusillade of rifle bullets from all three boats. The whale dives, but the Inuit hunters keep up the chase, not allowing the huge animal to relax for a second. The larger fishing boats move steadily forward, seemingly herding the whale, while the tiny skiff races effortlessly across the water, trying to be there at close range whenever the whale surfaces. It's hard to say how many rounds they fire into the whale or, indeed, how many hits with a rifle it would take to disable such an enormous animal. No harpoons or other specialized whaling gear is visible on any of the boats. Exactly how they intend to land it is anybody's guess. But this scene repeats itself again and again—the whale rising, being hammered by more bullets, and diving—until the Inuit hunters and their prey vanish in the distance into the bleak Arctic twilight.

The next day in Uummannaq we talk with a young Inuit woman who works at the small hotel restaurant where we go to eat dinner and escape from the storm—which blew in a few minutes before 6:00 A.M., just as Jack had predicted. We tell her about the whale and ask if she knows how the men could get something like that home if they killed it. She says they would probably attach a chain to it and tow it their village. "But sometimes the whales sink to the bottom and wash up three months later, no good for anything," she tells us. "It's very sad."

17 JULY 2000; UUMMANNAQ: The storm is still blowing, with no letup in sight, so we're grounded for now. Outside the small harbor in front of the settlement loom mountainous icebergs that weren't there the day before. Even though the settlement has a steel cable barrier stretched across the harbor, many smaller icebergs have pushed in and are crowding against boats. Earlier we had one iceberg ride up on our anchor rope, threatening to pull the boat under or capsize it, so we had to move it to a better spot in the anchorage.

Tom and I take the opportunity to visit the small museum in the village and learn more about Bertelsen. The curator, Lucia Ludvigsen, is very helpful. She's an Inuit and a native of Uummannaq but was educated in Copenhagen. She speaks perfect English—with a Danish accent—and tells us about the history of the area. We mention the empty bird colonies. The birds were still there in the 1960s, she tells us. She puts the blame for their disappearance squarely on the ships that often brought tourists from Disko Bay on sightseeing cruises



The cryptic colors of a Glaucous Gull chick are a near perfect match for the rocks behind it. This bird is on a dog-free island, up a side fjord far to the north of Uummannaq.

up the fjords. "When they got to the bird cliffs, the ships would blow their horns to flush the birds so the passengers could see them" she explains. She speculates that the birds' eggs fell out of their nests as the birds flushed and were smashed on the rocks below. "The birds finally abandoned the cliffs," she says.

But then she goes on to say that when she was a girl, she and her family would often visit the nearby islands in summer and harvest bird eggs. "Now all the 'well-tasting' birds are gone," she says. "Only the 'storm-birds' [Northern Fulmars] are left." It seems a telling comment that the only species that remains here is the fulmar—foul-tasting and unpleasant to catch because it spits a noxious oil on predators when it is attacked.

18 JULY 2000; UUMMANNAQ: We head out early today, full of high hopes. The weather has improved markedly, and we hope to knock off the final nine Bertelsen sites in one long day, covering some 200 miles of fjords. The scenery seems to get better and better the farther we go. Looking up at the jagged, snow-capped peaks, rising 4,000 feet above the fjord, all I can think of is Valhalla—the sacred place of ancient Norse legend. And the farther we get from Uummannaq, the more wildlife we're seeing. We stop on an island and find newly hatched eiders and some fledgling Glaucous Gulls. A second, larger island has ravens, Lapland Longspurs, and Rock Ptarmigan. We find several active gull colonies, some of which have nesting Black-legged Kittiwakes, a species that was scarce or absent on all of the earlier cliffs we checked.

Then it happens. A slight uneasiness in one of the engines, more felt than heard at first, like a slight stutter. Gradually it gets worse, the engine now misfiring audibly as we push forward at our unrelenting pace. Bertelsen sites fall one after another before us, but the engine cannot be ignored. We change the sparkplugs, which seems to help for a few hours, but the misfiring comes back, worse than ever. We finally turn back toward Uummannaq in the afternoon, just three sites short of completing the survey. Soon we're only running on one engine, which cuts our speed well below half, because we don't have enough power to get the hull to plane on top of the water. We're now traveling at less than five miles per hour. It takes us all night and then some to reach Uummannaq.

Author Tim Gallagher stands at the highest point on a small island, beside a cairn probably erect years earlier by the Inuit. The island has nesting Lapland Longspurs and numerous Rock Ptarmigan.

JACK STEPHENS

EPILOGUE

Though we try for several days to get back on track—calling an ace boat mechanic in Seattle repeatedly via the satellite telephone and getting step-by-step instructions on how to fix the problem; trying everything we can possibly do to make the boat shipshape; and then heading doggedly northward, hoping to reach Thule before a major storm is due to hit—but it's hopeless. The motor has water mixed with its crankcase oil. It has a blown head gasket at best, or perhaps a cracked block. Turning southward, we make the long haul back to Uummannaq one more time. We're all in a somber mood that last night on the boat, even though the full moon hanging above the fjord in the purplish light of the Arctic, surrounded by snow-capped peaks, is one of the most beautiful things I've ever seen.

Soon we will all go our separate ways. Tom Cade has already left on a com-

mercial flight back home. But we must fly all the way south to Kangerlussuaq—where the boat trip began—before we can fly back north to Thule. That's the way things work in Greenland. As for me, though, I manage to hitch a ride on a C-130 military transport plane from Kangerlussuaq directly to Upstate New York, instead of having to fly from Thule Air Base to Baltimore and then take a commercial plane to Ithaca.

We are still three sites short of checking all of Bertelsen's sites, but Bill and Kurt will return in late summer and at least take GPS readings of them and see if any nesting took place.

As for what all of the data we gathered this season means, it's too early to say. It will take much more research before anyone can say with certainty just what factor or series of factors are to blame for the disappearance of so many nesting birds, but clearly this spectacular place is not as pristine as it appears. Was it the cruise ships? Global warming? Maybe. But a strong circumstantial case exists that the birds have been overharvested by the indigenous people to the point that many of their breeding colonies are no longer sustainable.

The Inuit are an amazing people, with a tenacity for life that made them capable of thriving, against all odds, in one of the harshest environments on the planet. To survive, they had to kill as much food as possible, gorging themselves and caching whatever was left to be able to get through the times of starvation. The tenuous thread they held onto simply to stay alive made this necessary, and it became part of their being and their overriding ethic to be great hunters. But now that they have motorboats, rifles, and shotguns, perhaps they have too much of an advantage over the animals they hunt. If this turns out to be the case, then the Inuit will have to curtail some of their hunting or their unique way of life could vanish along with the seabirds, whales, polar bears, walrus, and seals they traditionally pursue. All we can do for now is to watch, gather data, report on our observations, and hope that it will make a difference. ■

"Return to Uummannaq" is an excerpt from Tim Gallagher's new book, Parts Unknown *(The Lyons Press, 2001), due to be released this coming June.*

Cruising northward on another bone-chilling morning in northern Greenland, Bill Burnham (left) scans for birds with his binoculars. The open boat provides great unobstructed views of the birds and their nesting cliffs, but a little shelter from the wind and weather would be a nice touch.

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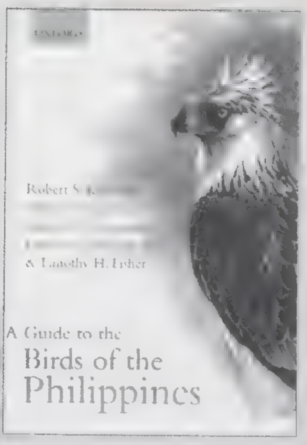

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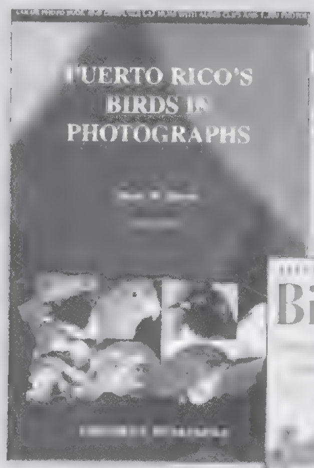

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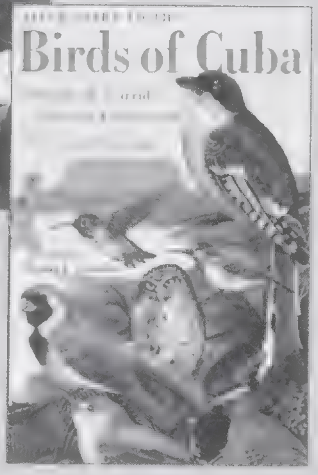

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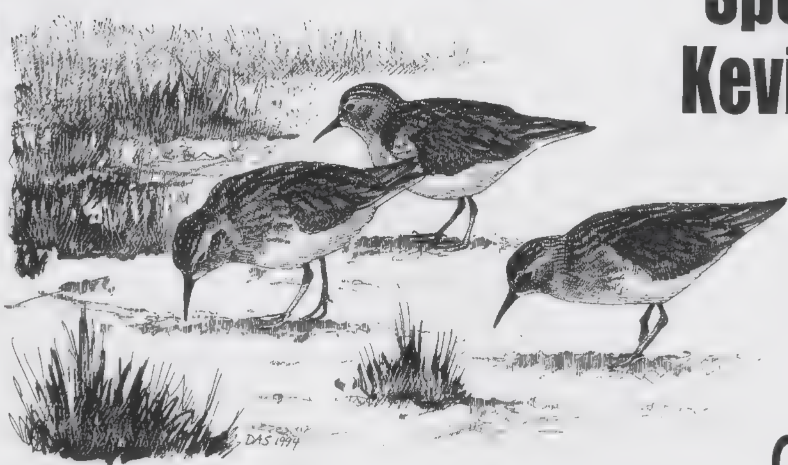

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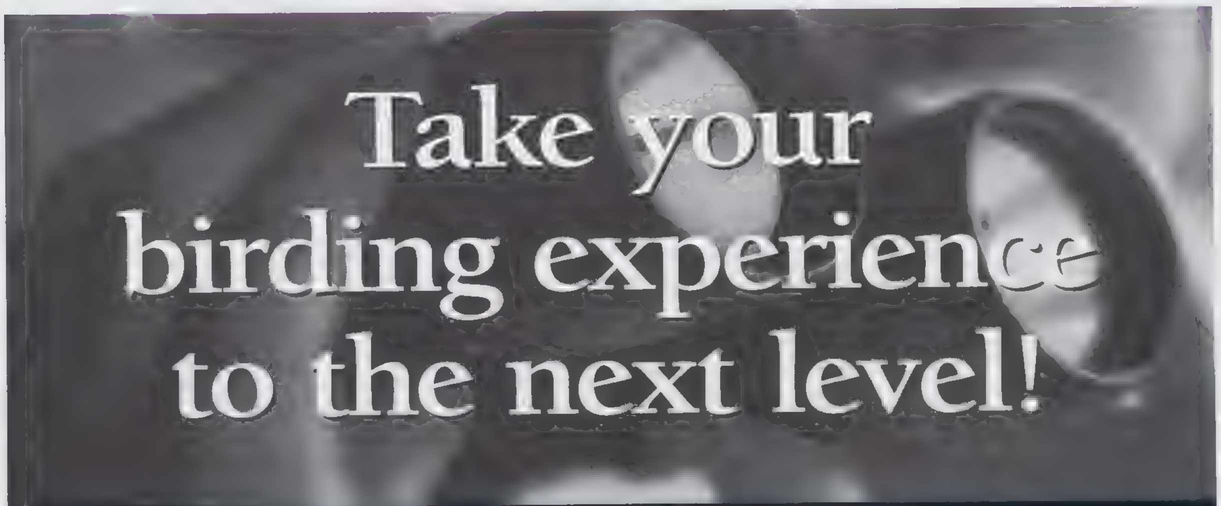

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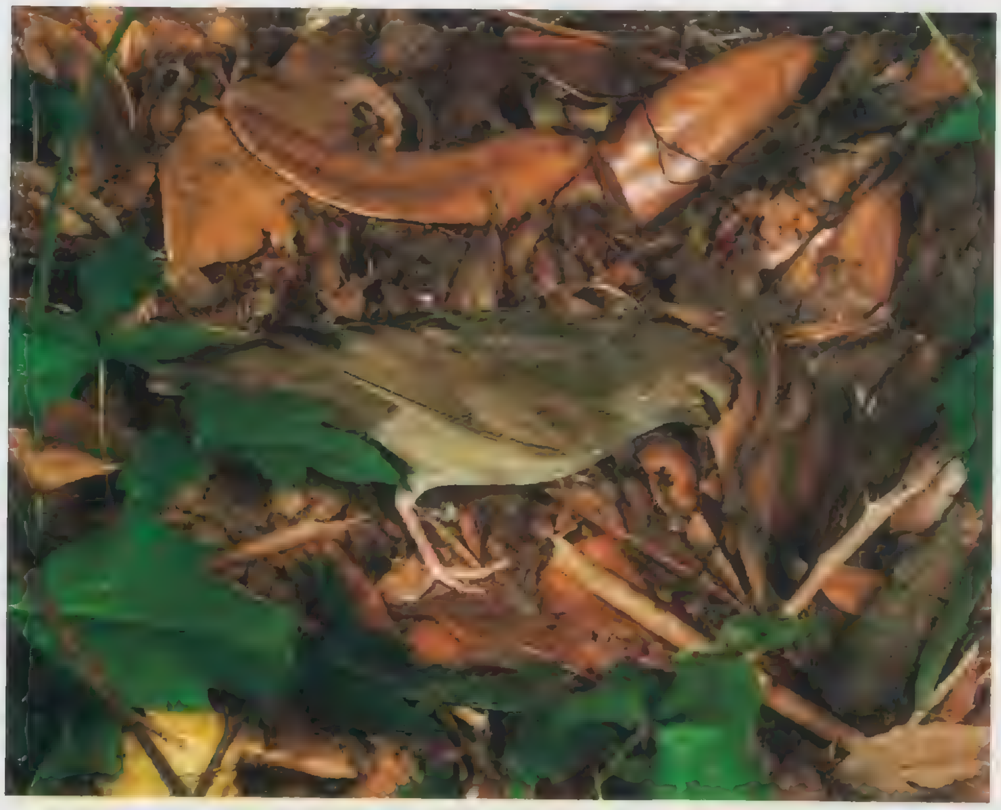
Brooke Meanley and the Case of the Elusive Swainson's Warbler

TEXT AND PHOTOGRAPHS BY WILLIAM BURT

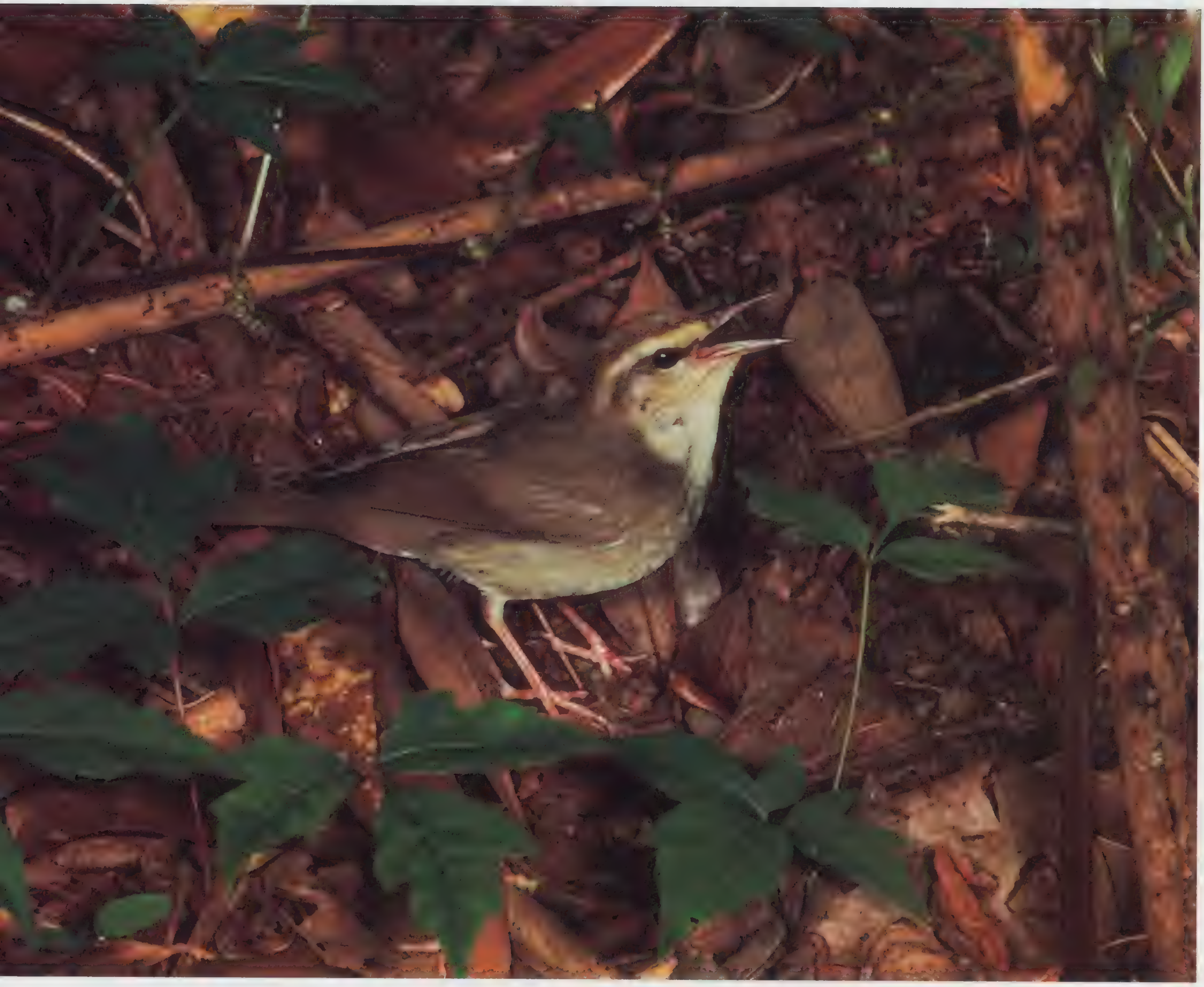
Tracking down one of nature's most secretive songsters

The first time I ever spoke with Brooke Meanley it was about Black Rails and their nests. I'd found a nest, after two seasons of searching in the big Spartina marshes of southeastern Maryland, and Meanley had called to ask how I did it. In his many years of field work, throughout the South, no other nest had so eluded him. I told him how: I'd simply searched the salt grass aimlessly and mindlessly, endlessly, until I got lucky, and my eye caught the artificial twist of grass signalling the presence of a nest canopy. It was a triumphant moment, to be sure; but it was a triumph to receive his call, as well.



Swainson's Warblers are hard to find. They spend most of their time picking through dead leaves in the undergrowth of swamps (above). Their nests look like a shapeless clod of debris left behind by a flood (facing page).

Meanley, a veteran naturalist and biologist with a penchant for the Southern swamps, marshes, and other wild places studiously avoided by most people, is a man whose writings I knew well. In addition to his many journal articles and papers, produced over a 30-year career with the U.S. Fish



From the bottom of the woods, standing on the leaf litter of his home habitat, a Swainson's Warbler sings out his distinctive loud, slurred whistles: teer, teer, teer, whitiperwill.

and Wildlife Service, he has written a number of popular books on natural history, many about birds of the South and their intriguing if sometimes unpleasant haunts. One hallmark of those books is their refreshing unpretentiousness: the absence of that aloof, authoritative air that deadens so many a book on natural history. Yet they are informed, as only those can be of an author long acquainted with his subjects—which in Meanley's case include not just the birds but their environments and in particular their plant associations. But his emphasis has always been on birds, especially those that are the least known and most intriguing—and especially those that live in swamps and marshes. In one book, *Birds and Marshes of the Chesapeake Bay Country,* the Black Rail is a central character; in another, *Swamps, River Bottoms, and Canebrakes,* the Swainson's Warbler.

But he is more than an authority on certain arcane birds of swamps. Brooke Meanley is that uncommon kind of naturalist, a gentleman evoking the grace of an earlier day and the likes of Arthur Cleveland Bent, the venerable ornithologist from Massachusetts. He is a modest and softspoken man, slow to speak of his own accomplishments and quick to extol those of others, and encouraging, always, to younger naturalists. And he is the consummate all-around field man: keen, curious, and indefatigably patient. Patient? This is a man who once sat for seven hours at the base of a tree in the heart of Virginia's Great Dismal Swamp, in the steam-heat of July, to study the behavior of Swainson's Warblers at a nearby nest. And he did that on his own, unfunded time, impelled by pure curiosity.

So yes, it was a triumph to receive his call and field his questions about Black Rails.

Years later, it was my turn. I needed to ask about one of "his" birds, the elusive Swainson's Warbler. I wanted to see it and photograph it and find *its* nest; and to be sure, he was the man to call. He wrote the book, literally, on the Swainson's Warbler.

Meanley had studied this obscure bird for more than 30 years, and in a variety of its swampy strongholds, including the Ocmulgee River floodplain near Macon, Georgia, Monkey John Swamp in South Carolina, the Great Dismal Swamp in Virginia, and the Pocomoke Swamp on the Eastern Shore of Maryland. And, though he'd be loath to acknowledge any such claim himself, he has found more nests of the Swainson's Warbler than any other person alive: about three dozen, he once confessed when prodded.

Where should I concentrate my search? The Pocomoke Swamp was certainly the closest and most convenient of these sites, but it harbored just a small and tenuous population and one that had already been subjected to repeated visits by bird enthusiasts with tape recorders; so for me it was not a consideration. Where then, I asked Meanley, could a fellow poke about and try for photographs without disturbing the birds unduly, yet at the same time entertain some good chance of success?

The Great Dismal Swamp in Virginia was his first suggestion; he'd found Swainson's Warbler nests there in the past, and fairly readily at that. Too much dense, impenetrable cane in those other Southern swamps, he said. But then it had been some time since he'd done his field work there, he said, and I'd do well to check with Gary Graves at the Smithsonian Institution's National Museum—he was the most active student of the species now, and he might have other ideas. So I called Graves, and he proposed a site he'd studied recently, in south-central Louisiana: a thickety roadside strip of sproutland in the Atchafalaya Swamp.

I found the appointed limy road and headed off into the Atchafalaya and soon found my singing bird, in the single most unpleasant natural place of any kind I'd ever seen: a waterless, indeed a swampless sort of thicket-woods, only damp at best, and strewn with dry leaf litter. Poison ivy leafed out everywhere, not just on the ground but upward on the hosting trunks of trees. It was a dense and complicated place, and ominous, full of looping, winding, drooping roots and vines that often looked like snakes, and maybe snakes that looked like roots and vines for all I knew, though mercifully I did not see them. There would be snakes, I had been told, some of them poisonous—cottonmouths and copperheads and canebrake rattlers—so I did have them very much in mind.

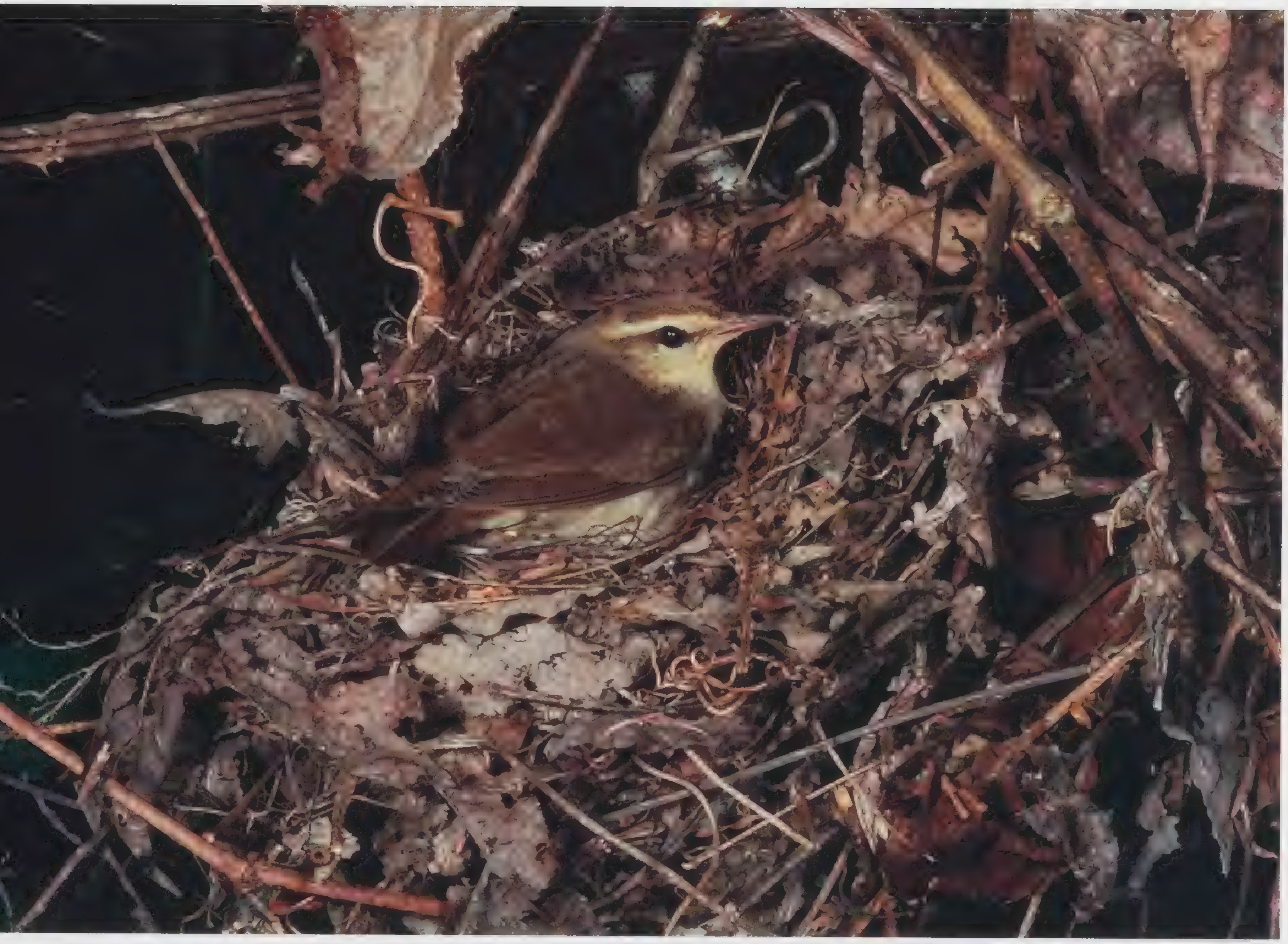
But there was another ugly thing about this complicated place: the vines of blackberry, or prickly brambles, that hung throughout in heavy veils. Wicked enough were the living green ones, but the others—dead brown, perilously difficult to see, and armed with seasoned mini-thorns about as hard and sharp as anything modern pharmaceutical technology could claim—were diabolical.

In order to progress, therefore, I had to engineer my way through with each of these three unpleasant elements in mind—the brambles, the poison ivy, and the potential snakes. So I was ducking under, sidling past, and stepping over things all at the same time, and where the brambles were too thick to penetrate I had to stop and beat them with a stick before they would give way. Again, I marvel at those hooked, hair-fine talons of the blackberry; they are so unbelievably tenacious. Once those micro-needles touch you or your clothes, however lightly and however few, they have you. They cling like Velcro. And when they do, you freeze: you disengage yourself, respectfully, thorn by deliberate little thorn, because if you don't, and you try to bull your way through, you'll only gain about half a step before you have to stop and do the job anyway, and in a much more urgent circumstance.

So here were my birds, singing with abandon. But where was the nest?

So here were my birds, singing with abandon in this and a few other complicated places. But what of the nest? The Swainson's Warbler builds a big nest, bulkier than those of some birds nearly twice its size (the Northern Cardinal, for instance), with an outside diameter about that of a salad plate. But it is rarely found, in part because of the nature of the habitat, of course, but also because of the nature of the nest itself. It is a shabby, inconsequential-looking piece of work externally, and it looks just like a clod of old leaf debris deposited by a flood—and there are many, many such clods in the thickets of this bird's floodplain home. Sometimes the nest is actually concealed, as well, often by the overhanging frond of a scrub palmetto.

Each day for a week I pried through those ghastly thickets, searching, investigating every lodgement of dead leaves, every ambiguity of every unrevealing shrub and tangle, but found no nest. I sat and waited, too, so the birds might appear and give some clue; but they did not. Discouraged, I rang up Meanley for moral support.



Author William Burt spent two years searching for a Swainson's Warbler nest—prying his way through ghastly thickets, dodging snakes and blackberry thorns, checking every clump of dry leaves—and finally: success. But Brooke Meanley found a dozen of these nests in the Great Dismal Swamp alone.

"Just keep at it," he said; I was searching the right places, at the right time. But he seemed surprised, almost amused at all this trouble I was having. "I never worked that hard for my nests," he said, with patent incredulity. Then he told me about the first ones he'd ever found, three of them, all in a little patch of cane in the Ocmulgee Bottoms near Macon, Georgia, back in the 1940s. "I just walked out into that cane," he said, "and looked around, and there they were." And he recalled another nest at the Great Dismal in Virginia, years later, which he actually found while sitting in his car. First he saw the nest itself, just off the road, and then the parent birds, coming and going with food.

He'd just "looked around, and there they were!"

I never did find my nest in the Atchafalaya, and this was a case of pure poetic justice, I am sure. But I resumed my search later, in the Pearl River region of southeastern Louisiana, on another lead from Gary Graves; and after three long days' meandering I came upon a junky mass of leaves hung artlessly in some stringy vines, just like some I'd already found and checked that day, except that this thing was so old and dead and dry and worthless, so indisputably inert, that I nearly failed to walk the few yards out of my way to check it. But I did, if only automatically, then reached up casually and tipped it toward me; and there, inside a crafted cup, were three gleaming pure white eggs. Astounded, I exclaimed something out loud.

At last, a nest, after two seasons of searching. At last I could tell Meanley. But imagine finding *30* of those nests, a *dozen* of them in the Great Dismal Swamp alone? How could he have done it?

I know; he just "looked around, and there they were." ■

William Burt's forthcoming book Rare & Elusive Birds, *a collection of photographs and essays on North America's "mystery birds," will be published in the fall of 2001 by Universe Publishing, a division of Rizzoli Publications.*

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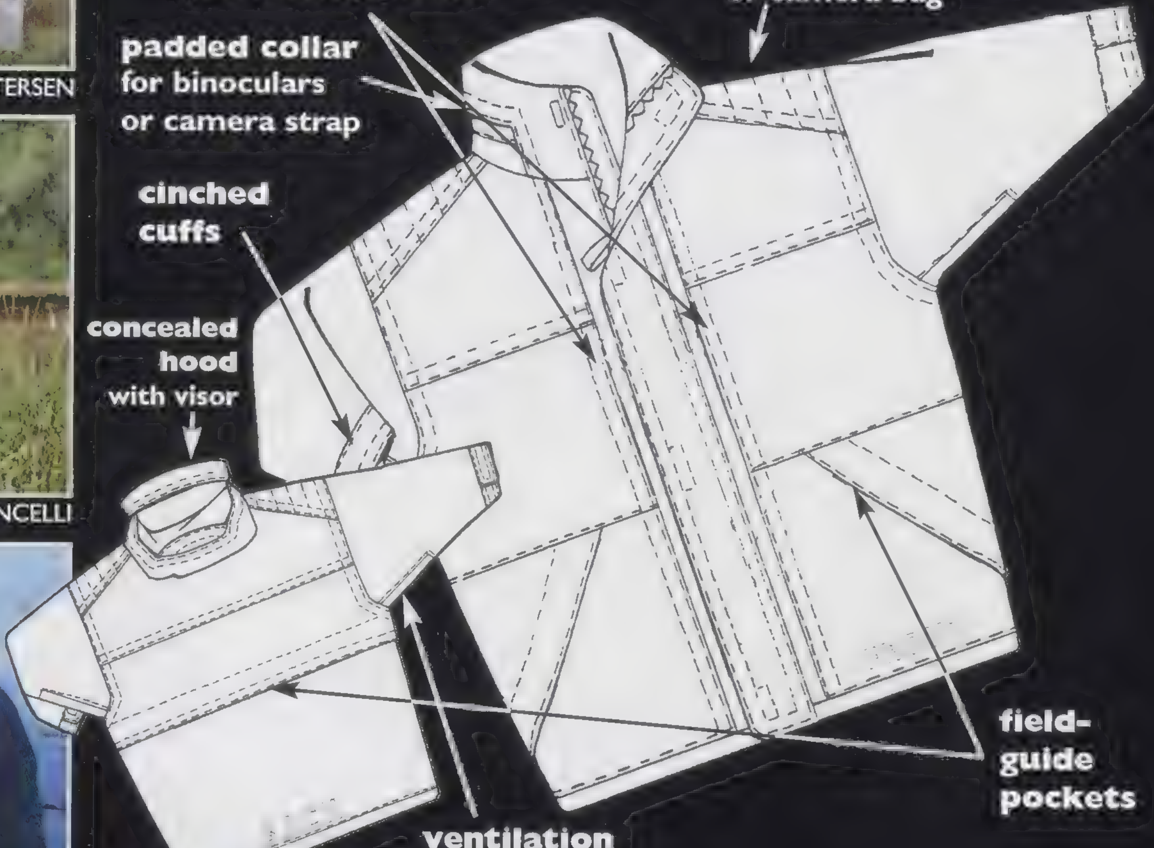
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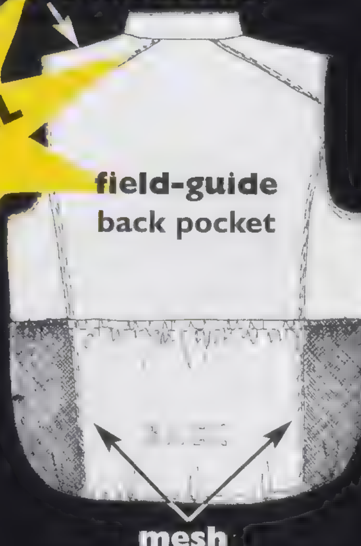

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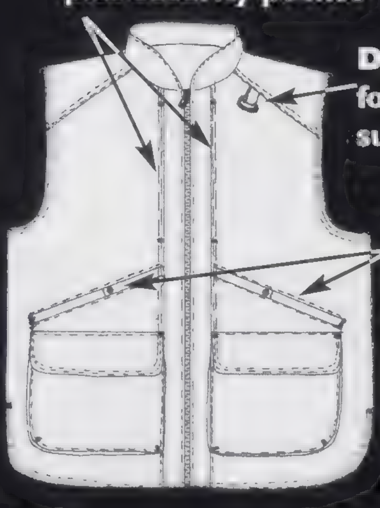

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SURFING *the* DAWN

TEXT BY DON KROODSMA
ILLUSTRATIONS BY STEVE CARVER

The magic light of daybreak spreads a pleasing cacophony of birdsong around the globe

A predawn darkness covers Cape Spear, Newfoundland, the easternmost point of North America. Foghorns drone and buoys ring, but all else is quiet. All else awaits the approaching dawn. Rushing over the Atlantic to this rocky headland, to this very place on our giant spherical carousel, comes a power surge that will energize and exhilarate every singing bird in its path. For about an hour, each will pour forth every strain it knows, as if there were no tomorrow. This dawn wave will then sweep west, transsounding the landscape, continuously, relentlessly, only to return 24 hours later, renewing the process.

The robins are first to sense it. In the trees just beyond the surf, the liquid caroling begins, *cheerily, cheer-up, cheerio.* To the west, Ovenbirds still catapult into the air, exploding with the last of their boisterous night flight song at the first hint of dawn in the eastern sky. Other warblers are just awakening, so energized that they chirp vigorously between their songs.

And then, the special one, the one who will carry this wave around the world. At first a distant tinkling, then growing stronger, this tiny songster pours forth his soul, jubilantly proclaiming his Ojibway name of *Ka-wa-miti-go-shi-que-na-go-mooch.* Understaters, these Ojibway, because he sometimes extends his song 10, 20 seconds or seemingly minutes on end, over and over, nonstop, with a vehemence unthinkable for such a small bird. Freeze this sweeping dawn wave momentarily and see him. This shades-of-brown-on-shades-of-brown mouse-bird with elegant but subtle barring is only a blur deep in his dark hemlock forest. The weight of a few shreds of decaying leaves on the forest floor, this Winter Wren is hardly enough to sway a twig as he darts from shadow to shadow. But there, there he stands, poised, looking, peering, menacingly strutting. Haughty, with stubby tail cocked toward his thrown-back head, bracing himself, bill open, this tiny wren delivers, as if his own song were to be heard around the world.

Unfrozen, the wave continues westward, a mile every five seconds, the speed needed to circle the globe in 24 hours at this latitude. But sound itself travels at that speed, so first light and first sound advance together, rushing west. Each singer enters the wave as it passes over, but it seems propelled by those who were singing yesterday, and back through eons of time, as their voices keep pace with the advancing wave. The songs of wrens past feel magically undiminished since the very beginning of wrenness; with the past in the present, the daily waves cumulatively form a giant singing tsunami, circling this globe, always.

Thousands of dawn signatures beckon, whisking me off to all parts of this glorious globe.

Each wren seems to shout "pass it on," and half a second into the infectious charge, the male on the next territory responds, and then the next, and the next. All along this front where dawn's first light sweeps Newfoundland, "pass it on" radiates from thousands of bills thrown wide, each singer pausing for a full breath only after the next 100 wrens to the west have heeded his call. Together, they connect, song after song, the links of this wren-chain secure.

Only half an hour into this journey, the wave's front now departs Newfoundland. So far, it has progressed largely westward, on a narrow front, because Newfoundland is just a tiny spit of land thrown out to sea. But now as this wren wave glides westward, it will expand and contract dynamically to the north and south as wrens throughout their geographic range join in.

Leaving Newfoundland, the wave diverges, one front to eastern Quebec and another to eastern Nova Scotia, separated by the Gulf of St. Lawrence. Simultaneously, it engulfs eastern Quebec and New England, the two fronts then merging again as the St. Lawrence narrows to a river. The southern front then races at twice the speed of sound down the narrow ribbon of wrendom in the Appalachian chain to a dead end in northern Georgia, where the hemlocks of the mountain tops give way to the loblolly pines of the warmer lowlands.

But in the north the wave continues westward, across a 500-mile swath extending from northern Michigan to Hudson Bay, then across a narrow band of boreal woodlands in central Manitoba, Saskatchewan, widening again in central and northern Alberta. Suddenly, the wave expands to the south, advancing over a 1,000-mile front, through the Rocky Mountains. Contracting only briefly, the wave expands to a 2,000-mile front, from the southern Sierra in California through western Oregon and Washington to the northern tip of British Columbia. Here are this wren's finest moments, its dawn effort the strongest and the broadest; from Yosemite to the Yukon, millions of tails are cocked, heads thrown back and bills wide, all hailing each other and the dawn.

This giant wave now narrows and shoots far to the north, riding a narrow coastal ribbon of wrens through southern Alaska, only to be hurled out the Aleutian chain. "Pass it on," off the end of the Aleutians and across the Pacific, arriving a few minutes later at the Kamchatka Peninsula, then down the Kuril Islands to Japan. Spanning the Seas of Japan and Okhotsk, the wave continues in Korea and southern Siberia, the halfway point of its daily journey.

South through China to northeast Burma, then over three miles high in the Himalayas of northern India and Tibet and down the other side, continuing through northern Pakistan and Iran. Well north of Iran, about an hour from Moscow, a second front gains strength, creating a double wave that progresses through Russia in the north and northern Turkey and the Balkans in the south. There the two waves join, forming one broad front from the Mediterranean to central Scandinavia. Next it passes southern Scandinavia and the rest of Europe, the Alps, the Pyrenees, a bit of northern Liberia and Morocco in Africa, through all of the British Isles, where it is hurled out to sea, to Iceland, a wren bridge poised there in the North Atlantic. "Pass it on."

The New World now awaits, and within an hour the wave will again sweep over Cape Spear. In the span of 24 hours, this wren's dawn signature has swept the world. It has no known political boundaries; dawn has been celebrated in songs linked around the world.

I feel this wave every day. As I linger in bed on a summer morning, it hits me a little before 5:00 A.M. I have almost an hour to revel in its glory, its strength, its inspiration, letting it sweep by so I can carry on with my day. But every day part of my spirit rides this wave. By midmorning, I am already accelerating up coastal British Columbia. By midafternoon, I am in Japan, by 6:00 P.M. high in the Himalayas, on top of the world. By midnight I have visions of invigorated wrens and airborne Sky Larks greeting the new dawn throughout France and England. The 24-hour clock on my wall is marked with locations, not with numbers, so that I always know where, not when, I am.

As I ride this summer wave, I hear this wren's dawn signature in three movements. Throughout eastern North America, I hear one voice. Songs have loud, mostly musical tones and whistles, delivered at a slow enough pace that I can hear the music; each male performs one or two different songs. Passing the great wren divide into western North America, I hear more frenetic singers: each bird has dozens of songs, each with extraordinary complexity, notes and trills following one another so rapidly that I hear but a high-pitched blur. They are like eastern songs at quadruple speed; slowed down, they reveal their great richness. The third movement spans all of Asia and Europe. There, songs are again slowly delivered, so that my unaided ear can appreciate the richness, and males have half a dozen or so different songs. For me, the most exhilarating ride in each of these three movements is the rapid sweep down the Appalachian chain, the intoxicating ride over the broad front from Yosemite to the Yukon, and the breath-taking, miles-high ride through the Himalayas.

Evolving over eons of time, the three movements grew from one, revealing the dynamic nature of this singing earth. This wren wave began in the New World, because all wrens originated here. Perhaps one movement became two as it was separated by advancing glaciers, eastern and western North American signatures then becoming distinctive. Eventually, this wren found the Old World; isolated from the two North American movements, it, too, became distinctive, now the third and longest in this perpetual dawn chorus.

This wave also changes seasonally. In late summer, families having been raised, the males sing less and the wave diminishes. Energy once used for singing is briefly diverted to making new feathers, ensuring a warm cloak for the harsh winter to come. With the birds elegantly refeathered, the song wave surges again in late summer. "Pass it on," making one last effort before the approaching winter. They again link songs worldwide, but they also link the past with the future, passing on the local tradition as the young are instructed in the local dialect. The young warble and babble, working to get it right, as they now contribute their own voices to the wave. The local dialect is thus maintained, the local integrity of the wave ensured. As winter approaches, the wrens of higher elevations and latitudes move down, and the song wave again subsides. Dawn is now more typically greeted with a brief burst of *tic-tic-tic,* like striking pebbles loudly together, the shape and intensity of the wave having been transformed to its winter season. As spring approaches, those higher elevations and latitudes are once again reclaimed, and the three global movements will again be at their peak. As the seasonal cycle begins anew, about half of the wave will now be contributed by the yearlings, fresh from their intensive schooling, forming the link between the past and the future.

The dawn signature of this Winter Wren, so called because it seems to thrive in the harshest of northern weather, is especially exciting, but thousands of other dawn signatures, by other species, also enthrall me. That of the House Wren, a close relative of the Winter Wren, is enormously broad, engulfing most of the New World, from the Yukon to the very tip of South America. Its strength oscillates seasonally, from summer in the Northern Hemisphere to summer in the Southern Hemisphere. As I awaken on a quiet, cold winter morning in New England, I delight in knowing that dawn has already swept for two hours into eastern Brazil and up the Amazon, where House Wrens and their tropical companions are heralding the new day. The dawn signature of the Paramo Wren is more local, occurring only two to three miles high in the Venezuelan Andes. Low in the grasses, pairs and trios of birds emerge from their cozy, domed nests; the adult male and female perch high, together, heads thrown back, bills wide open, dueting the dawn greeting. Within minutes, I surf this signature up and over the crest of the Andes, where the wave ends as abruptly as it began. Thousands of other unique dawn signatures beckon, too, whisking me off to all parts of this glorious globe.

As a scientist, I like to think, too, about why these birds hail the dawn. It is usually the male who sings, and he does so to defend his territory and impress females. Perhaps at dawn, after a long night, it's especially important to declare that he's still alive and well. Also, it's still too dark to look for food, and in the dawn stillness, his songs carry especially well. But what better time to intimidate rival males and persuade listening females? On an empty stomach, after fasting all night, who can sing the longest and loudest and most impressively? The singing competition can be especially intense if males have opportunities to attract a harem of females, as in the Winter Wren. Even in monogamous species, however, females often mate surreptitiously with males who are not their social partners, so impressive singing is still essential. I have been taught as a scientist that I should not anthropomorphize, but I must wonder how their minds work, how the singing maestro and his listeners feel about his singing. Who's to say that this vocal foreplay is not enjoyable and exhilarating to these tiny singers? Do humans have a monopoly on enjoying the business of procreation?

My alternative to riding these dawn waves is to anchor myself at a given location, letting dawn sweep over me, feeling each of the local participants mark the coming and going of the first light. Eyes closed, I visit the canopy walkway over the sprawling Amazon forests; mist hangs in the tree tops, and below me the tinamous continue their plaintive wails, the Great Potoo grates his gutteral *wah-h-h oo-oo-oo*, and the Nightingale Wren serenades. As quickly I can be in the forest of tussock grass on tiny Kidney Island in the Falklands or deep in the cattail marsh at Saskatchewan's Eyebrow Lake or perched on the fire tower at local Mt. Lincoln in my New England forest. I am a part of this endless spectacle on this giant singing sphere. Anywhere, I can celebrate the coming of dawn's first light, a special event no doubt since the beginning of earth-time some four billion years ago but acquiring renewed dynamism some 150 million years ago as dinosaurs became birds. Always, somewhere, first light sweeps the globe, and always, somewhere, the birds are singing.

I now realize that it is not dawn's first light that rushes toward me, but I and those around me who are rushing to the dawn. The perceived effect is the same, but I like the active role I play in the new perspective: as I lust for the dawn, this perpetual, singing carousel actually hurls me eastward, toward the light. When I meet that magical wand, I can then choose to ride that dawn light around the globe, feeling the oneness of this singing sphere. Or I can anchor myself, feeling the wave sweep by, assured that at any moment I can put my ear to the earth and pick up this wave at some distant part of the globe. ■

Don Kroodsma is a professor of biology at the University of Massachusetts at Amherst.

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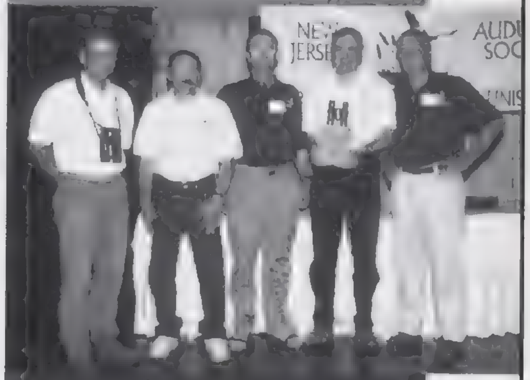

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The Catbird Seat

STRINGERS

by Pete Dunne

This column is about "stringers." **Stringer** *n* **1:** One whose bird sightings are stringy or suspect. Every state has its stringers. They are celebrated for their audacity. They help define and sanctify the pure and honest birders and help pass the time while everyone is waiting for the Little Stint to show up (and the conversation on the most recent birding tour taken and newest thing in optics has dried up).

"Oh right, [name deleted], now he's a stringer" (the inference being that you are not).

What makes a stringer? There are several key attributes.

First, although stringers are part of the birding social and informational network, they always either bird alone, with someone who is less experienced, or with another stringer.

Second, they habitually locate uncommon to rare birds (that nobody else seems to be able to find) with a frequency that humbles the efforts of other skilled birders—not to mention, beating all odds.

Third, when you meet them in the field, they always tell you that you should have been there "five minutes ago," because they just had a [insert something improbable here].

Fourth, their signature expression is: "It couldn't have been anything but" (translation: I got a fleeting glimpse of a bird but couldn't really tell what it was).

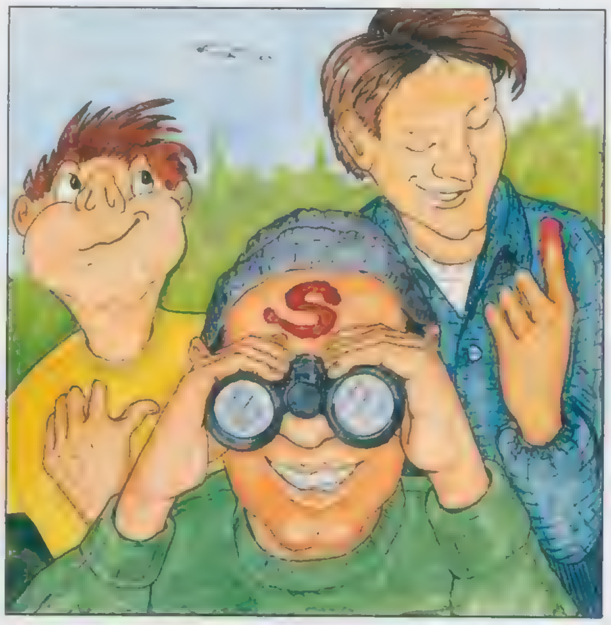
Fifth, whenever their names are mentioned in a group of birders, they all roll their eyes.

Sixth, they don't realize that they are stringers.

But these are merely the attributes of a stringer. They say nothing about the roots of this terrible malediction.

It would be easy to say that stringers are just birders who are liars and be done with it. But for the most part, this is not so. I think stringers really, truly believe that they saw what they say they saw.

Stringers tend to be skilled and knowledgeable birders. They understand the cause and effect relationship between habitat and species, bird movement and temporal distribution.



They go to, say, a tidal wetlands in their Christmas Bird Count territory at dawn. They know that Black Rails breed there and have even been recorded in winter. They know that a Black Rail would be a real coup at the roundup, and that they should be attentive to . . . "and that was a small Black Rail that just ran across the the creek. It couldn't have been anything but. Holy cramoly! Just goes to show you how important it is to be prepared."

So, are stringers knowledgeable birders whose imaginations get the better of them, or are their standards of acceptance not as stringent as the norm? In part. But they are also birders who seek to anchor or elevate their standing among other birders through their sightings (otherwise, amassing stringy sightings would be about as satisfying as cheating at solitaire).

The reason that stringers exist is because the birding community supports them. You heard me. We'd tip the authorities off to the identity of a mass murderer, we'd confront a neighbor whose dog pees on our begonias, but when your local stringer tells you that he or she just had a Sooty Albatross off Long Island . . . ("Couldn't have been anything but!") . . . we say: "Hmmmm."

Anyone who can turn a juvenile Northern Gannet into a Sooty Albatross can interpret "Hmmmm" as an affirmation.

That's right. We are what they call (in the old substance abuse environment) facilitators. We are partners. We are that which hears the tree falling in the forest and makes the sound.

Hmmmm.

Stringers can't exist without us any more than birding could exist without a community of birders and a foundation of sightings that are fundamentally honest and accurate. We define them; they help define us—and the line between stringers and nonstringers is probably not as sharp as most of us like to think or pretend.

By the way, the guy who tried to turn a Virginia Rail into a Black Rail under the catalytic influence of poor light and preconception was me; sometimes you forget how small and dark Virginia Rails are.

So, does that make me a stringer?

I don't think so. I mean, I believe that what I saw is what I said I saw.

But then one of the attributes of stringers is that they don't know they are stringers. And nobody in the birding community would tell me if I were.

Ridiculous! I'm *certain* that I'm a careful, honest observer . . . couldn't be anything but. ■

ILLUSTRATION BY JEFF SIPPLE

LOUIS AGASSIZ FUERTES

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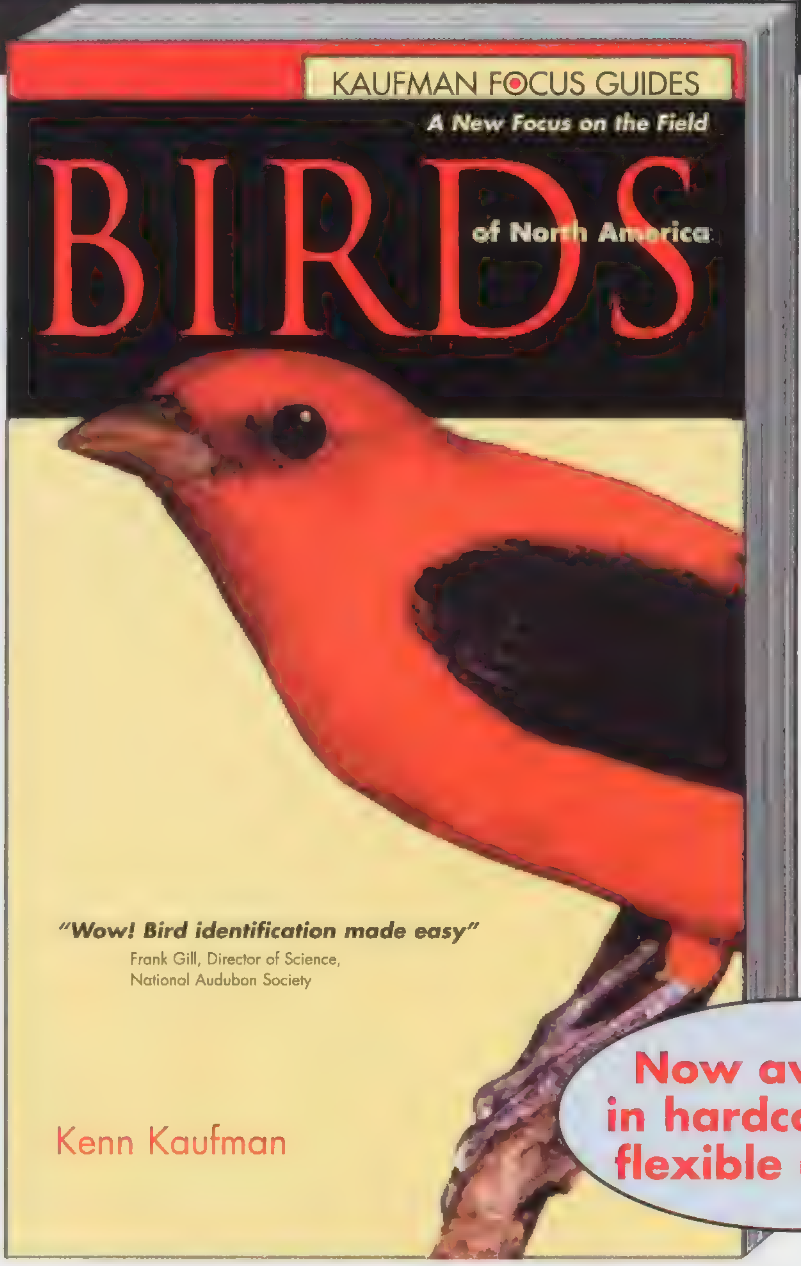
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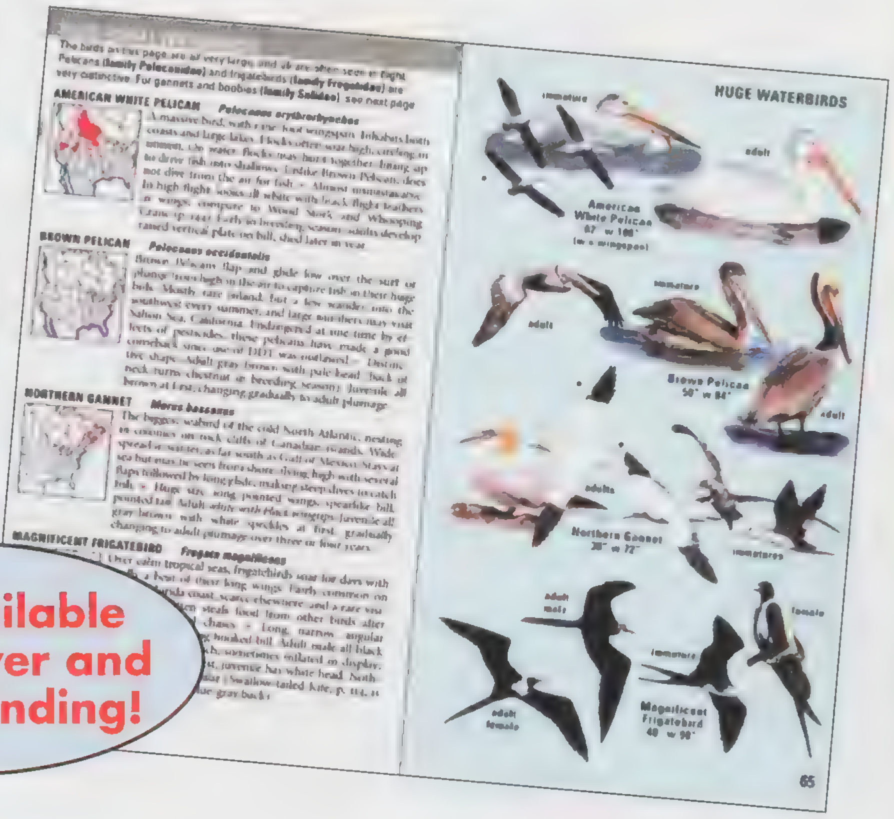

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SUMMER 2001 VOLUME 20 NUMBER 3

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Exploring the world of the Brown Pelican—above and below water.

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In search of America's dancing grouse.

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GREETINGS FROM SAPSUCKER WOODS

I first met Tui De Roy a couple of years ago in Austin, Texas, at an annual meeting of the North American Nature Photography Association. But I already knew her by reputation as one of the world's preeminent wildlife photographers.

She had an idyllic childhood, and its influence is clear in her work. When she was only two years old, her parents moved from their native Belgium to the Galápagos Islands, where Tui spent most of her life. And this was in the 1950s, long before this remarkable archipelago became a popular destination for ecotourists.

Tui never attended a formal school. The Galápagos Islands were her primary school, high school, and university, where she learned directly from nature—spending countless hours afield, observing the area's birds and other animals, most of which are remarkably unafraid of humans. She also spent time with many of the scientists who came to study the unique plants, animals, and ecosystems of the islands. Tui learned much from them and also shared her own intimate knowledge of the area. When the Galápagos Islands became a national park, she was its first licensed naturalist.

Her articles and photographs began appearing in major American magazines when she was still a teenager, and she has since written several books on the Galápagos Islands as well as one on Antarctica. Now she travels throughout the world with her partner Mark Jones, photographing the rich natural splendor of this planet. She currently lives in New Zealand.

We're pleased to present a portfolio of Tui De Roy's Brown Pelican images and an article she wrote about the species on page 10.

Tim Gallagher
Editor-in-Chief

Cover: An adult Brown Pelican carefully tends its young at a nest in the famed Galápagos Islands. Photographer Tui De Roy spent most of her life there, getting to know the area's spectacular wildlife. See page 10. Minden Pictures.

Right: An adult male American Wigeon preens its feathers. The distinctive white forehead and cap of the male in breeding plumage make him easy to identify in a mixed flock of ducks. Photograph by Marie Read.

Back Cover: A Brown Pelican plunges after a fish in a tide pool. An instant later, the bird's pouch will balloon out like a dip net and engulf the fish. Photograph by Tui De Roy/Minden Pictures.

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TALKIN' ABOUT BINOS

I am writing to ask for a refund. I recently renewed my membership, but I have changed my mind because of an article by Pete Dunne ("Talkin' Good Glass and Good Sense") in the Winter 2001 issue. I was astonished that Pete Dunne would be allowed to write a piece on buying binoculars when he has such a conflict of interest now that he pitches binoculars in magazine ads.

Although he may well be sincere in what he has written, how can anyone be sure? The more binoculars that are sold, the more money he will make. It also seems suspicious that the only binoculars he mentions getting rid of [Zeiss 10x40s] are made by a company he does not do ads for, and worse yet, his criticism of them is inaccurate.

Marlene A. Condon
Crozet, Virginia

We appreciate your comments (and we also regret losing a member), but we stand by Pete Dunne's well-intentioned advice on optics. It's difficult to deny that optical manufacturers have made enormous strides in binocular design during the past decade and that birders will enhance their enjoyment by having up-to-date equipment. He did not promote any specific brand, and your suggestion that he only said bad things about a brand he has no connection with is not exactly correct. Pete has been captain of the Zeiss "Guerilla" big-day birding team for years, so this was actually a case of biting the hand that feeds him.

The Editors

COLD COMFORT

Tim Cahill's hilarious tale of the falconers in the Winter 2001 issue ("Forgot My Pants, Lost My Mind") reminded me of a similar predicament my husband found himself in one spring day several years ago. We were living in Upstate New York and had a cottage on a small lake.

He decided to row over and check out the Wood Duck house on the other side of the lake. The house was a metal cylinder, like a much-overgrown tin can, topped with a Tin-Man-of-Oz conical hat. He had to stand up in the rowboat to take off the cap so he could remove any leftover summer debris.

The boat was a bit tippy and, in trying to keep his balance, he dropped the cap overboard. His dilemma: to go into the just-above-freezing water after it or abandon the whole project. Not one to admit defeat so readily, he stripped and plunged in after it.

He surfaced, only to spot the rowboat halfway across the lake, still bearing his clothes, but fortunately at least bobbing along homeward. Now another dilemma arose. Swim after it? Not a good idea considering the cold temperature and the rapidly increasing distance, already at least a quarter of a mile. The almost equally unattractive alternative was to bushwhack through to the dirt lane leading off the main road to the cottages.

He could picture himself trotting along, barefoot from head to toe, a bald, gray-mustached 60-year-old, bearing—or perhaps wearing—a tin dunce cap. But, he reasoned, there was little chance of traffic in the middle of the morning, in the middle of the week, in the middle of March. So he did make it unobserved (as far as we know) to find the rowboat nuzzling the shore.

Elizabeth F. Washburn
Charlotte, North Carolina

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

CALIFORNIA CONDOR BY ART WOLFE

Good News for the California Condor

One of the most important events so far in the California Condor recovery effort took place on March 25, 2001. A pair of captive-bred condors laid an egg at a nest in Arizona's Grand Canyon. (Before this, the last egg produced in the wild was laid in 1986.) The female condor had been hatched in March 1995 at The Peregrine Fund's World Center for Birds of Prey in Boise, Idaho, and was released with eight other California Condors in May 1997 at the Vermilion Cliffs site in northern Arizona.

Although the egg has since been inadvertently broken by the adult condors, the significance of this pair having laid it cannot be overstated. At six years old, California Condors are just reaching breeding age, so this is the earliest that this female could have been expected to produce an egg. And young condors are notoriously clumsy during their initial nesting attempts. With more experience and maturity, the breeding success ratio of this and other pairs can only improve. So it's possible—and perhaps even probable—that we will see California Condors once again reproducing in the wild within the next two or three years.

The total population of this species now numbers 160, with 49 of them in the wild in California and Arizona and an additional 10 in field pens being prepared for release.

Victory!

On May 12, 2001, the Sapsuckers finally did it. On a tough big day in which only five teams broke the 200 mark, the Sapsuckers amassed a winning score: 214 species. Now the magnificent silver Urner Stone Cup rests on an oak table at the Lab—right beside the Stearns Trophy (for highest score by an out-of-state team, which the Sapsuckers get to keep for yet another year). The Delaware Valley Ornithological Club's team (which has won the World Series of Birding for the past couple of years) also found 214 species, thereby tying for top honors with the Sapsuckers. So only one challenge yet remains for the mighty Sapsuckers—to win an unshared first-place World Series of Birding title.

TIM GALLAGHER

TIM GALLAGHER

A Distinguished Guest

Famed author and ecologist Paul Ehrlich (above) and his wife Anne visited the Lab for breakfast and a bird walk through Sapsucker Woods this past April 26. About 30 local Lab friends came along on this bright but chilly spring morning. Ehrlich (who lives in sunny California) quipped, "This is only the third sunny day in the history of Cornell."

Welcome Aboard

We're pleased to announce that a new editor has joined the Lab of Ornithology staff. Miyoko Chu will serve as editor of *Birdscope* and assistant editor of *Living Bird.* Miyoko brings an impressive scientific background to our Publications unit. She has a Ph.D. in biology from the University of California at Berkeley, where she studied the Phainopepla (she's the co-author of the Phainopepla's species account in the *Birds of North America* series). She also studied journalism at the University of California at Santa Cruz.

Flying Field

AN ENGLISH HOLIDAY

by Mel White

Separating the wheat from the Chiffchaffs in Merry Olde England

This other Eden, demi-paradise,
This fortress built by Nature for herself . . .
This blessed plot, this earth, this realm,
this England.
—William Shakespeare

The fact that I identified my first English bird by voice should in no way be construed as indicating any degree of expertise on my part. This lifer was, in golf terms, a gimme. Or—a better analogy—it was as if an English birder newly arrived on, say, Roanoke Island had stepped off a boat and heard *killdeer* or *phoebe* over the sound of the waves.

In my case, I had parked beside a quaint little red-brick church in a quaint little West Sussex village called Ebernoe, and the instant I opened the car door I heard an insistent *chiff-chaff, chiff-chaff* from the top of a tree beside the graveyard. To end the suspense right here, it was a Common Chiffchaff. After a few minutes of neck-straining, my friend Kim and I had managed only one quick look; as distinctive as its song was, the bird was equally elusive in the foliage. Though we heard many of them during the next two weeks, we never had more than dull, uninspiring glimpses.

The Common Chiffchaff is one of the Old World warblers, a group of birds that a hard-hearted person might compare with our warblers and call dull and uninspiring, but that—in the interest of Anglo-American relations—I will call subtly hued. Field guides had indicated, and experience was soon to prove, that a high percentage of English birds are subtly hued. In fact, after I'd been in the country a week, I began thinking of Northern Cardinals and Prothonotary Warblers the way a prisoner on a bread-and-water diet might think of fried chicken and barbecue.

To be fair, though, that wasn't always the case. The second bird I saw was a Blue Tit, singing a song whose trills reminded me a little of a Winter Wren's. Tits are English chickadees ("Tits, wrens, and all wing'd nothings . . ." — Tennyson), and the Blue Tit's blue-and-yellow plumage makes our American birds seem like so many waiters in tuxedos: spiffy, but unadventurous.

We had picked out the small nature reserve called Ebernoe Common as the first stop on our British tour

KIM BURNETTE

Intrepid globetrotter Mel White takes a misty morning stroll across Dartmoor, "the fabled upland of heather and rain and bogs, of shaggy wild ponies, and of weird towering crags called tors."

for a couple of reasons. It was less than 25 miles from Gatwick Airport as the Carrion Crow flies, and a guidebook called it “an ancient wood, one of the best examples of what an original ‘wildwood,’ or natural, unmanaged woodland, may have looked like.” It sounded like a good place to stretch our legs after the nine-hour flight from Dallas, and in the short time it took us to drive there we learned a few important lessons about Jolly Old England: it rains in the springtime. Lots. But there are anomalous periods of “fine” weather, one of which we had just missed. “Should have been here last week,” the bloke at the car-rental desk said, nodding at the drizzle outside. “*Beautiful* weather.”

The fast lane on English motorways is for people who drive literally 100 miles an hour, and God help you if you’re in it when somebody in a Jaguar or BMW wants to pass. We’d rented a tiny pathetic thing called a Rover Metro, which I’m pretty sure was powered by AA batteries or methane from fermenting sheep manure or somesuch, and in the class system of the motorway it was the equivalent of a fishwife at Buckingham Palace. I mean, if England still has fishwives.

Cricket isn’t just an elaborate and indecipherable system of linguistic metaphors. People actually play it! As we drove into Ebernoe on a narrow winding lane we passed a group of gentlemen in all-white clothes arrayed over an oak-ringed field, and unless it was some sort of charade that the British Tourist Authority arranges for all newly arrived Yanks, they were playing cricket just for fun.

We also had our first experience with another, more relevant, fact: there are lots of bird watchers in England, and they are immensely friendly and helpful. After we’d tarried awhile in the wildwood (Hmmm . . . do I hear lute music?) looking at delightfully cute Long-tailed Tits and a European Robin—the original Robin Redbreast—a woman saw our binoculars and stopped in the light rain to tell us that we should visit nearby Petworth Park, where a Little Owl had been showing itself recently. “Too bad you weren’t here last week,” she added. “We had lovely weather. Unseasonably hot, really.”

No owl appeared at the park, the former estate of some duke or earl, but we saw a few other common birds, including a Green Woodpecker, which, like our flickers, spends part of its time hopping around on the ground eating ants. Then we braved the motorway again to reach our B&B in the New Forest, the largest tract of wild (for England, anyway) woodland in the southern part of the country.

The “New” Forest was designated a royal hunting preserve in 1079 by William the Conqueror, and during the next almost-millennium evolved into a protected source of timber for ships of the Royal Navy and, more recently, a national parklike recreation area attracting masses of visitors. It has significant tracts of native trees (a rarity in thoroughly cultivated southern England), and, most amazing to us, an “ornamental drive” through an area of giant sequoias, redwoods, and Douglas-firs planted in the mid-19th century. In the wet British climate they’ve grown to monumental size, creating a bit of West Coast America across the Atlantic.

Yellow gorse and pink rhododendrons were blooming and the woodland trails were lush and green, but I left the New Forest a bit disappointed. We saw plenty of the English birds we’d admired in the guides—Common Redstart (the original owner of the name), Northern Lapwing (a loud, rowdy, crested plover), Goldcrest (a kinglet cousin), Eurasian Jay (much less conspicuous than our Blue or Steller’s), and many more—but the rain and steady high winds kept us from making the most of our time. (Our innkeepers: “You should have been here . . . ,” etc.) We missed some of the local specialties, including Eurasian Nightjar, Wood Lark, and Dartford Warbler.

In search of the rare Dartford Warbler, we headed southwest to the Isle of Purbeck (a peninsula, not an island), which has a few remnant patches of the heath habitat the bird requires. We arrived at a spot called Studland Heath in a light rain, but, having decided we weren’t going to do much birding if we tried to stay dry, we struck out along a nature trail anyway. Our rewards were close looks at a Eurasian Reed-Warbler and a Common Cuckoo—both far more easily heard than seen, we learned as the days went by. Despite the weather, we also ran into a local birder, who gave us the bad news: though it was only June 4, Dartford Warbler males had already stopped singing from atop the heathland shrubs, which meant it was going to take a lucky break to see one of these shy little birds. We never got lucky.

Every birding trip has its ups and downs, and we were about to experience an unexpected up. The birder we’d met told us about a nearby B&B,

The European Robin (top left) looks nothing like an American Robin, which is really a thrush. The colorful plumage of the Blue Tit (above) makes our chickadees seem like “waiters in tuxedos: spiffy, but unadventurous.”

TOP: KONRAD WOHTE/MINDEN PICTURES. BOTTOM:ARTHUR MORRIS/BIRDS AS ART.

but it was full. We ended up in the Saxon market town of Wareham, where the tourist office made a few calls (the people in these information centers were as enthusiastically helpful as the birders we met on the trip) and sent us back south to the village of Langton Matravers. No sooner had we walked in the door of our inn than the owner had elicited the fact that we were birding.

“Completely by chance, we’d ended up near the easternmost breeding colony of Atlantic Puffins in southern England. These were the first puffins we inland-dwellers had ever seen.”

JOHN CANCALOSI

“So, you’re here to see the puffins, then?”

Blank looks. “You have puffins?”

“Oh, yes. Just follow the footpath across the road and it’ll take you to Dancing Ledge. They nest there.”

Completely by chance, we’d ended up near the easternmost breeding colony of Atlantic Puffins in southern England. We put away our bags and headed south toward the Purbeck Cliffs, which rise more than 300 feet above the English Channel. The public path passed through farm buildings and shrubs where a Dunnock sang its sweet song and a little group of European Goldfinches stayed put long enough to put our scope on them. England doesn’t boast a great number of gee-whiz birds, but these clown-faced finches surely qualify. An easy mile across fields brought us to the coast, where a couple out for a walk saw our binoculars and asked us about the birds swimming in the foaming sea down below.

“Lots of Common Murres,” I said, after I’d set up the scope. “Wait . . . You call them Guillemots here.” I scanned the water. “And two puffins! Oh, fabulous!” Or words to that effect.

The couple were taken a little aback by my enthusiasm, but these were the first puffins we inland-dwellers had ever seen. The fact that the opportunity had come so unexpectedly and in such a dramatic setting made the experience even sweeter. Our first European Shags were an anticlimax—just another flavor of cormorant, after all.

On the happy walk back to the inn, the clouds parted and the sun appeared like a searchlight over our shoulders, illuminating the coast eastward all the way to the Isle of Wight. Sky Larks, which had been absent on the walk out, were suddenly all around us in song flight, hovering in the air at the limit of visibility, the seemingly endless trills and buzzes of several birds overlapping continuously.

West, then, to Dartmoor, the fabled upland of heather and rain and bogs, of shaggy wild ponies, of weird towering crags called tors—*The Hound of the Baskervilles* country. Though every guidebook warns against it, we set off one morning across the moorland in a thick fog. The only Whinchat we saw on the trip sang from the top of a small bush along the path, and by the time we found a Reed Bunting and heard its chirping song, the sun had vanquished the cold gray mist. Northern Wheatears darted in and out of niches in the stone walls of an old mining site, and three Common Buzzards soared overhead, giving a *kee-er* call like that of a Red-shouldered Hawk.

A little later, a hunch paid off. Driving past the East Dart River, we decided the rocky burbling stream and its environs looked like Colorado. We stopped, got out, and sat on the riverbank. Within 10 minutes, a juvenile White-throated Dipper flew up and landed on a rock, followed by an adult, which stuffed an aquatic invertebrate down its offspring’s not-yet-completely-white throat.

That night, having a couple of pints of bitter at a Dartmoor pub that traced its beginnings back to around 1200 A.D., we confessed we were feeling pretty ancient ourselves. And—belatedly, I’ll admit—we realized what had been happening. This was our first trip this far north in summer, and we’d been out every day from early morning till dusk. But up here, dusk comes after 10:00 P.M., and we were just wearing ourselves out, going and going. (I discreetly omit here the possibility that we might have spent too many nights enjoying small-town pubs and local brews.)

It was a night for reflecting on the trip so far. We agreed that with 49 million people in a place the size of Alabama, the country is just too crowded to be our kind of relaxing birding getaway. Back roads that, on the map, seemed to invite poking around were too often clogged with vehicles going somewhere in a hurry. It minimized our frustration, we found, to know exactly where we were going and go there, with no thought of stopping and looking along the way.

I can accept this approach, but the parks and reserves that are the goals of English birding trips seem constricted and domesticated compared with America’s wide open spaces. Centuries of human alteration have created a landscape of pastoral, not natural, beauty, lacking spots where, in the words of the artist Walter Anderson, "the world of man is far away and so is man." Why, we wondered, did we see so few woodpeckers? Is it because England has so few "wildwoods" full of dead trees and unmanaged rot? Because its forests are as carefully tended as backyard gardens?

We must state, then, that England isn't the place for people who like to bump along a dirt road for an hour to get to an empty parking lot at a wilderness trailhead. Yet in the pub that night in Devonshire sat I—a person with an overwhelming aversion to crowds and traffic—having a wonderful time.

England's relative scarcity of wild lands means that the ones that endure are passionately loved and protected. It was actually quite gratifying, visiting parks, to see so many people out enjoying them not just as picnic spots or children's playgrounds but as places to appreciate nature. One tremendously important aspect of the English love of the countryside is the zealously defended system of rights-of-way—sign-posted walking routes spider-webbing practically everywhere, providing access across lands public and private, and well-used by this nation of walkers.

> *England's relative scarcity of wild lands means that the ones that endure are passionately loved and protected.*

The real joy of our trip was the English themselves, and specifically English birders. The other side of so many people crowding onto such a small island was the inevitability—well, let's call it the blessing—of meeting others who shared our obsession. Except in odd cases such as our misty Dartmoor hike, we encountered birders everywhere, and they unfailingly approached us with advice and good wishes.

Hearing that we were eventually heading to East Anglia, a birder in Dorset told us about the best place in the country to find Eurasian Thick-knee, at a small, out-of-the-way reserve set aside just for this scarce species. At Slapton Ley, near Dartmouth, a couple alerted us to a pair of Eurasian Treecreepers they'd seen down the path, the only ones we found on the trip. At the famous reserve near Cley-next-the-Sea, in Norfolk, a local fellow practically took us in hand to make sure we found a vagrant Great Reed-Warbler that had been singing in a patch of reeds for weeks. (Alas, he couldn't help us with the Bearded Reedlings we so wanted to see.) After he'd showed us all he could at Cley, he guided us to a spot a few miles away to help us see a pair of nesting Honey Buzzards, another of England's most elusive breeders, and left us with hand-drawn maps to two spots where we might find Montagu's Harrier (success) and Eurasian Golden Oriole (no dice).

On the final full day of our trip we ended up, fortuitously, back at Ebernoe Common. After finding an inn a short drive from Gatwick, we realized that we still had a few hours of daylight left and that the "wildwood" was not far away. We weren't looking for new birds, just out for a last relaxing stroll through the old oaks behind the churchyard. We heard a guttural *grrrrr* from a thicket, coming from something that just wouldn't show itself. We had to get down on our hands and knees to peer inside, and then a few feet away alighted an apparently curious Common Nightingale. Without really knowing why, I felt there was something symbolic about finishing our journey with this plain-Jane but much-romanticized bird.

The next morning was the first of the entire trip to dawn absolutely clear, warm, and calm. "Looks like another spell of fine weather coming up," the innkeeper said. "Summer's finally here, I suppose. Too bad you're leaving today."

Was England playing a joke on us? Maybe. But I prefer to think of this sunny day as an invitation to return. There are a few birds—and a whole lot of pubs—we haven't seen yet. ■

Workshops for Birders

Institute for Field Ornithology

Shorebirds
Wayne Petersen
Sackville, New Brunswick
Aug. 5–12, 2001
Aug. 4–11, 2002

Fall Warblers
Jon Dunn & Kimball Garrett
Leamington, Ontario
Aug. 27–Sept. 2, 2001
Aug. 26–Sept. 1, 2002

Tropical Bird Ecology
John Kricher
Chan Chich, Belize
July 15–22, 2001
January 7–14, 2002

Raptors
Clay Sutton
Cape May, New Jersey
October 13–18

Learn more about birds! IFO workshops provide a comprehensive look at bird biology, life history, ecology, behavior, conservation, and field identification.

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A Wonderful Bird is the Pelican

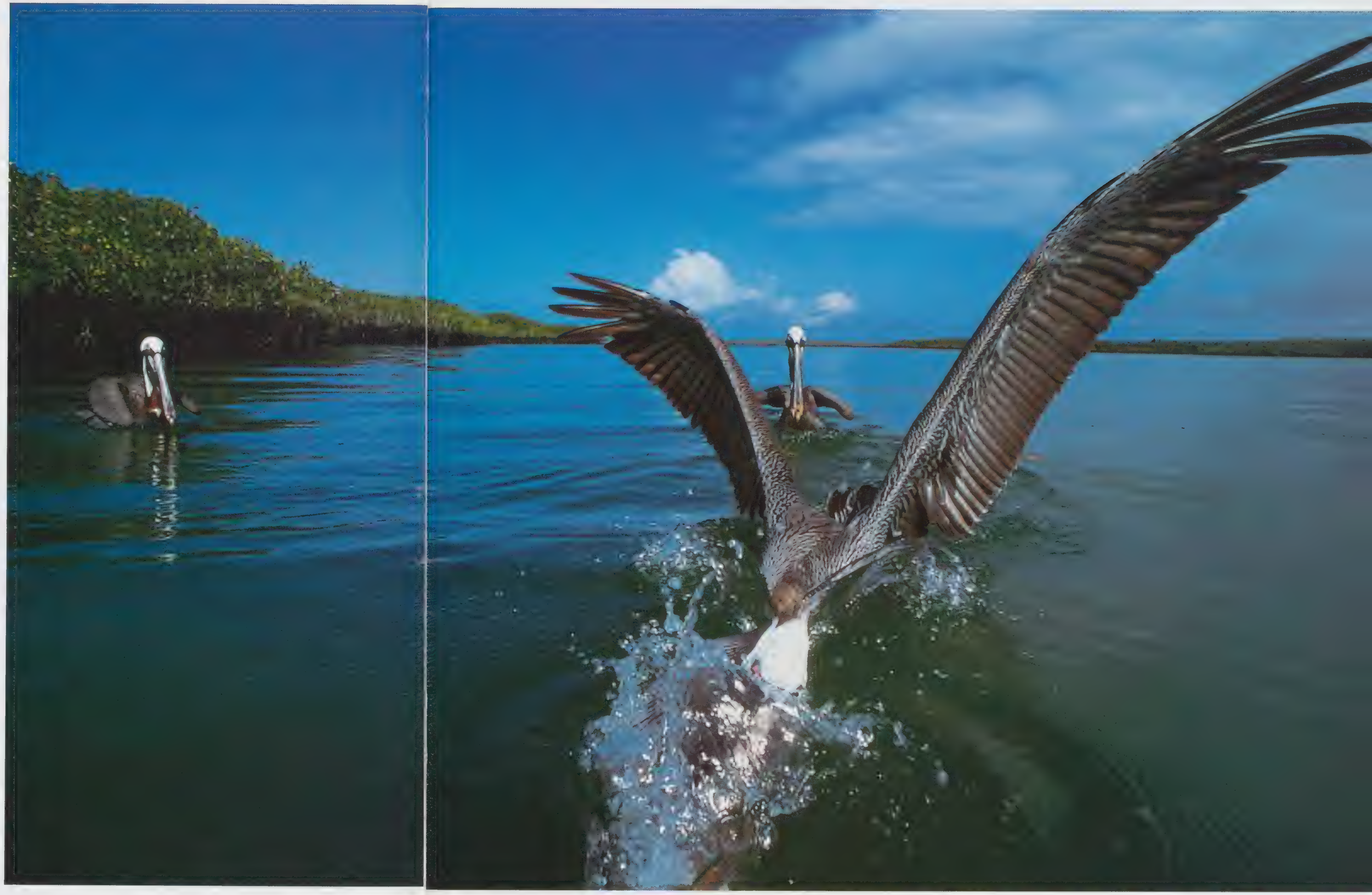
TEXT AND PHOTOGRAPHS BY TUI DE ROY

Exploring the world of the Brown Pelican—above and below water

Like a squadron of ancient pterodactyls set against the crimson sunset, a flock of seven Brown Pelicans glides silently over the treetops, descending in their final approach to a quiet mangrove inlet in the Galápagos Islands. Their large black outlines cast mirror images as they swing low over the burnished waters of the cove. They have an almost somber appearance with their massive swordlike beaks jutting forward and small heads tucked between their shoulders, and yet their slow, fluid movements lend them infinite grace.

I have been sitting for some time in a rowboat among the stilted mangrove roots along the uninhabited north coast of Santa Cruz Island, contemplating the brief and peaceful tropical twilight while waiting for the pelicans to arrive on their last fishing round of the day. And now here they are, looking somewhat ponderous with their six-and-one-half-foot wingspan as they circle overhead in perfect formation, all seven birds leisurely flapping in synchrony. As they pass close, I hear the powerful swish of their broad wings. Though I may have watched the evening patrol of the Brown Pelicans a thousand times before, I still relish the beauty and tranquillity of the scene.

Tranquillity? All of a sudden, the seven birds stall in midair and come hurtling down. *Kerrrploooosh!* They crash into the peaceful waters, shattering the silence



A Brown Pelican plunges after a school of tiny fish, breaking the silence of an isolated mangrove inlet in the Galápagos Islands. Pelicans are the only birds in the world with a built-in dip net. Of the eight species, only the Brown Pelican and the closely related Peruvian Pelican have taken to the sea and combine a dip-net fishing strategy with plunge diving—often from 30 feet up or higher.

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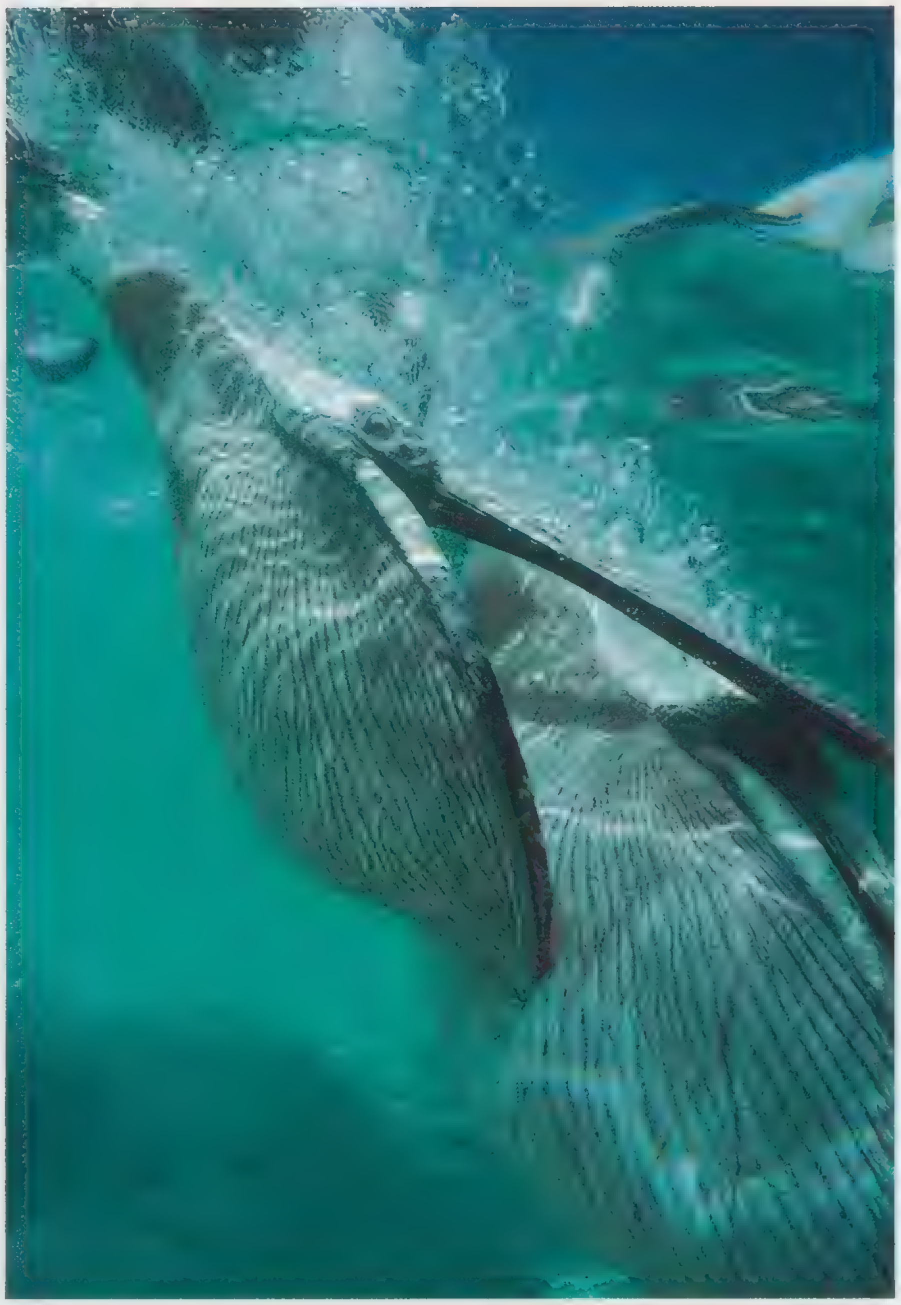


Brown Pelicans thrust their long, S-shaped necks downward as they hit the water. Holding their spearlike bills closed at first, they then open them wide, allowing the force of the water to spread the flexible edges of the lower mandible apart and balloon the pouch, engulfing their prey. The structure of the pelican's bill has remained unchanged for 20 to 30 million years. Brown Noddies (below right) routinely perch on the heads of feeding pelicans and steal small fish right from their bills.

and sending a nearby night-heron flapping back into the thickets, squawking indignantly. Waves from the birds' impact now slosh and splash among the dangling mangrove roots, water tinkles everywhere like glittering beads, and big clapping beaks clamp shut as the pelicans one by one throw back their heads to swallow their catches. Satisfied, they take off together and rise to perch for the night in the mangrove canopy, leaving me to listen to the whine of the evening's first mosquitoes.

I grew up in pelican country and have watched them fish all my life, but the success of their incredible fishing technique always amazes me. Pelicans are the only birds in the world that have a built-in dip-net to catch their food. This adaptation underwent its evolutionary fine-tuning so early on that pelicans have remained virtually unchanged for some 20 to 30 million years. Perhaps this is the reason that they have such a prehistoric look.

Today ornithologists recognize eight species of pelicans around the world, six of which are white pelicans that inhabit inland bodies of fresh water, catching their food by simply paddling along the surface of turbid waters and grabbing any fish that come within scooping range. The Brown Pelican (*Pelecanus occidentalis*) has taken to the sea and perfected the ability to use its dip-net fishing strategy in combination with plunge diving from considerable heights. A cushion system of air-filled pads under its skin protects the pelican from the force of its impact when it crashes into the sea from 30 feet or more high. Because of the buoyancy of these air-filled pads and the birds' hollow bones, pelicans create quite a splash when they hit the surface, and they rarely submerge completely. Instead they thrust their long, S-shaped necks forward just as they hit, jabbing down four or five feet and opening their beaks with precise timing to engulf schools of herrings, sardines, or other small fish.

Brown Pelicans prefer shallow estuaries or shoaling shorelines where small schooling fish are plentiful—either mangrove inlets such as those in the Galápagos Islands, rocky coasts in Mexico and California, or sandy desert beaches down the Pacific coast of South America. These birds range through many of the warmer waters of the Americas, from New England to Brazil in the East and from Oregon to Peru in the West.

In addition to diving down on schools of fish, they sometimes cash in on the booty created by feeding sea lions and other marine predators or by fishermen discarding scraps. This trait enabled me to fulfill my dream of

watching a pelican feeding frenzy from under the surface, by attracting a flock of hungry pelicans to a netful of freshly caught mullets in a tide pool. Years of marveling at plunge-diving pelicans from above did not prepare me for the scene below. Flapping noisily at the surface they took aim from well above—as they must, because their eyes are not adapted for seeing underwater, unlike those of most other diving birds.

I stayed motionless underwater, holding my breath, and was amazed to see the precision and speed with which the pelicans' long, seemingly awkward beaks shot down amid clouds of bubbles, which no doubt helped confuse the fish. Their beaks entered the water like spears—closed at first, then opening wide to allow the thin, flexible edges of the lower jaws to flex open as the force of the water spread them apart and at the same time stretched out their pouches fully. Because so many pelicans were feeding at once, the competition was intense, with beaks intertwining and their sharply hooked tips digging into each others' distended pouches. At the same time, though, the melée of paddling feet, jabbing beaks, and flapping wings was clearly creating utter confusion in the fish's undersea realm, thus making the combined efforts of the birds vastly more successful than fishing solo.

Although it is an excellent tool for catching dinner, the pelican's huge beak can be a liability while feeding. Anchored by a slowly draining pouchful of water, which can hold up to three gallons, Brown Pelicans attract less specialized seabirds, which hang around hoping to steal an easy meal. Various gulls, frigatebirds, and even herons take advantage of feeding pelicans. Dainty Brown Noddies routinely tag along behind feeding pelicans, perching on their heads to extract tiny fish right from their beaks. The small Galápagos Penguins also know that fish are easy to catch in the turmoil caused by diving pelicans and sometimes dart to the scene so eagerly they momentarily end up inside the pelican's pouch—much to the surprise of both parties.

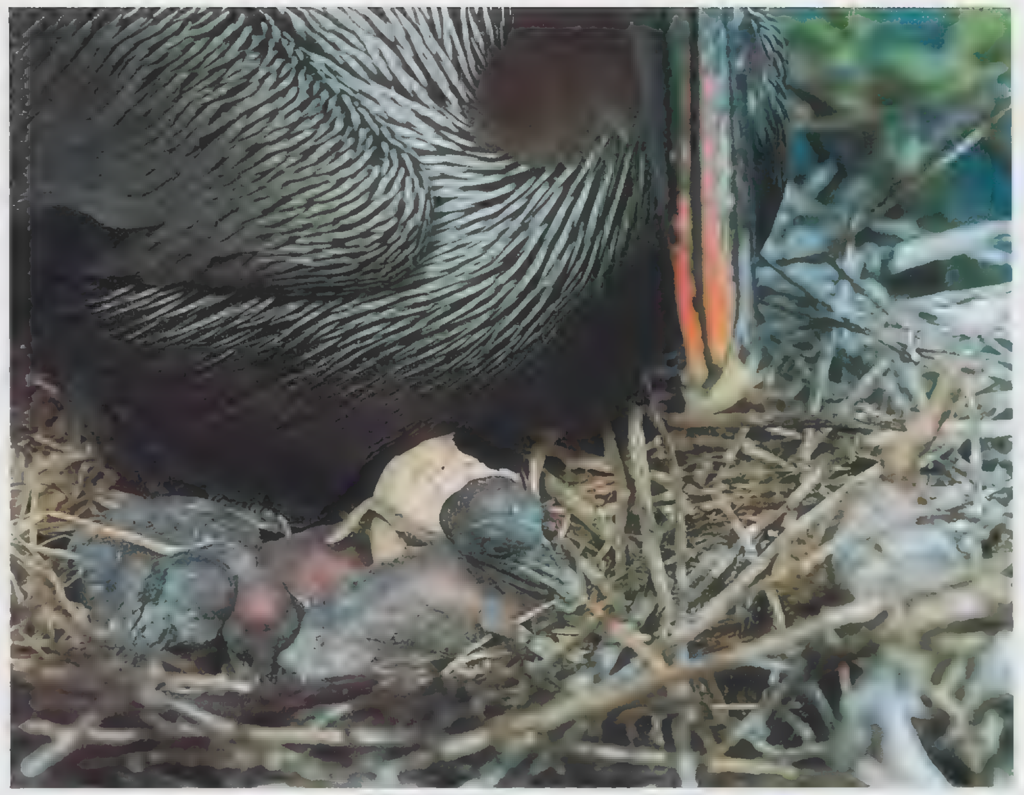
A male Brown Pelican collects nest-building material from a mangrove lagoon in the Galápagos Islands (left). These birds build a sturdy platform of twigs, often lined with grasses, placed either on the ground or in trees or shrubs.

An oversized beak presents other dilemmas in daily life. As diving birds, pelicans must keep their feathers clean and waterproof through frequent and careful preening—a difficult task using an appendage that's about as dainty and delicate as a boat paddle. Yet they succeed admirably. I have often watched pelicans bathe energetically by slapping their wings heavily onto the water, then come ashore and begin systematically nibbling their disheveled plumage, using acrobatic twists of the head and neck to reach difficult spots. Like other seabirds, a pelican must use its beak to get waterproofing oil from a gland at the base of its tail and then spread it evenly onto its feathers.

But the greatest demand on a pelican's beak-control comes at nesting time. First, there's the business of building a nest—sometimes on the ground but often in mangrove trees or salt shrubbery. This, surprisingly, the pelican does with greater care than many other seabirds, weaving a respectable platform of twigs often lined with softer grasses. Males provide the nesting material, which they may fly quite a distance to find and carry back in their beaks, while their mates sit tight and see to the tricky building details, twisting and tucking each sprig into place with endless patience.

Pelicans don't usually mate for life, but they are faithful partners during the nesting season, sharing all parental tasks equally. At the nest, mates greet each other elaborately with graceful bows and slow head-waving motions to show off the size and superb breeding colors of their beaks and pouches. Although these temporary colors are always centered around the head and beak, they can vary dramatically in different populations. The Brown Pelicans of the eastern United States are characterized in the breeding season by their lovely chocolate-brown necks offset by a white head and coal black pouch, while their counterparts in Baja California have stunning blood-red tinges in their pouches but less contrast in their head coloration. Tropical populations of Brown Pelican are generally drabber, but their beaks may become tinged with vivid salmon and flaming orange.

The most extraordinary hues, however, are those of the closely related Peruvian Pelican *(Pelecanus thagus)*—now recognized as a distinct species—whose dazzling breeding colors include a black neck, sulfur-tufted head crest,



Newly hatched pelican chicks are blind, featherless, and completely helpless (right), but they grow quickly and within a few days get their first coat of white down. At left, Brown Pelican parents shelter their young.

and sky-blue pouch. This pelican, which nests in dense colonies on the plantless desert islands of Peru, builds its nest by scooping up great pouchfuls of sand and seaweed from the beaches and carrying it back to the densely packed nesting areas where the mortar is scraped into a low hollowed-out mound to shelter the eggs from wind.

Regardless of color variations, the challenge of raising young is the same for all Brown Pelican parents as they try to feed their newly hatched chicks, up to four in each nest, which emerge from the eggs blind and featherless after a month-long incubation. Barely capable of lifting their small, wobbly heads at first, the young pelicans squeak helplessly to draw a quick response from their parents. The adults ever so carefully dribble small amounts of fish slurry down the length of their beaks and into the tiny waiting mouths or drop it on the nest floor for the eager chicks to pick up. Under such care, the chicks grow quickly. A few days after hatching, they grow their first white coat of down.

During the next few weeks, the parents are taxed to the fullest. Both mother and father must shuttle back and forth constantly between the sea and the nest to satisfy the ravenous appetites of the chicks, as well as seeing to their own needs. An adult pelican must consume four pounds of fresh fish per day, but a total of about 150 pounds is required to rear each chick to independence, which takes around three months. As the chicks grow, they become fiercely competitive. The parents allow a free-for-all to develop as the small beaks dive into their spacious gapes to get a cropful of fresh-caught fish. Weaker chicks are often pushed aside by older siblings, and some eventually perish.

The real test for young Brown Pelicans comes when they leave the nest and—now rejected by their long-suffering parents—must fine-tune their own dip-netting skills. I have often watched their clumsy first attempts as they awkwardly grab at floating mangrove leaves or branches with their barely controllable, oversized beaks. At this stage, the skin of their young pouches and large webbed feet is still delicate—easily torn on sharp objects or when tussling with other pelicans' hooked beaks.

Young pelicans have more dangers to contend with today than ever before, testing the species' adaptability to the utmost. After surviving so successfully through the eons, the birds face an entire battery of new human-created threats to their survival. Much coastal habitat has been altered or destroyed by development projects, and the birds must now compete with increasing numbers of fishermen as many fish populations dwindle. Many pelicans become entangled in plastic bags, old gillnets, and other flotsam in coastal waters and either drown or starve. Most ports and

Life is tough for Brown Pelican parents during nesting season. It takes three months to raise a pelican chick from egg to independence, during which time it will eat approximately 150 pounds of fish—and some nests have four young. At right, an adult pelican feeds its young.

coastal waters are soiled with spilled oils that damage the pelicans' feathers and are toxic when ingested, and major crude oil spills from tankers or drilling rigs can wipe out entire populations. Even the activities of casual sportfishermen harm many pelicans, which get snagged on discarded fishhooks and lines.

The most insidious threat to the survival of the species so far, however, came in the early 1960s when the widespread use of chlorinated hydrocarbon pesticides such as DDT devastated much of the Brown Pelican population. These pesticides caused the birds to lay thin-shelled eggs, which often broke under the weight of an incubating parent before they could hatch. The die-off of these birds was so drastic that they were nearly extirpated from the West Coast of North America and in Louisiana. By the time DDT was banned in the United States in 1972, Florida had the only remaining viable population of Brown Pelicans in the entire country.

Fortunately, Brown Pelicans have proven resilient and adaptable to most human-created changes. They often make the best of new situations. In some parts of South America, they have learned to become nocturnal in busy ports, spending their nights catching easy prey around floodlit ships and piers and sleeping away the daylight hours. In Baja California, they follow close in the wake of returning sportfishing boats, snatching discarded bait fish in midair, and in the Galápagos they have even learned to rob the illegal but commonly used gillnets without becoming caught themselves, much to the ire of the fishermen who set them.

Brown Pelicans may look somewhat gawky when perched (at left), but in the air, soaring across an open bay with their massive swordlike bills jutting forward, they are magnificent.

On a recent visit to San Francisco Bay, where Brown Pelicans are still recovering from their brush with extinction, I watched a skein of these majestic birds drift past a vibrant sunset. I was reminded of poet Dixon Lanier Merritt's well-known ditty:

> *A wonderful bird is the pelican,*
> *His bill will hold more than his belican.*
> *He can take in his beak*
> *Food enough for a week,*
> *But I'm damned if I see how the helican.*

Once again, I realized how much poorer the world would be without these oddly endearing, prehistoric-looking birds, huge beaks to the fore, gracing the coastal skies of the Americas. ■

Tui De Roy is a freelance photographer and author who grew up in the Galápagos Islands. She and partner Mark Jones travel the world photographing natural habitats and wildlife. She is represented in the United States by Minden Pictures of Aptos, California.

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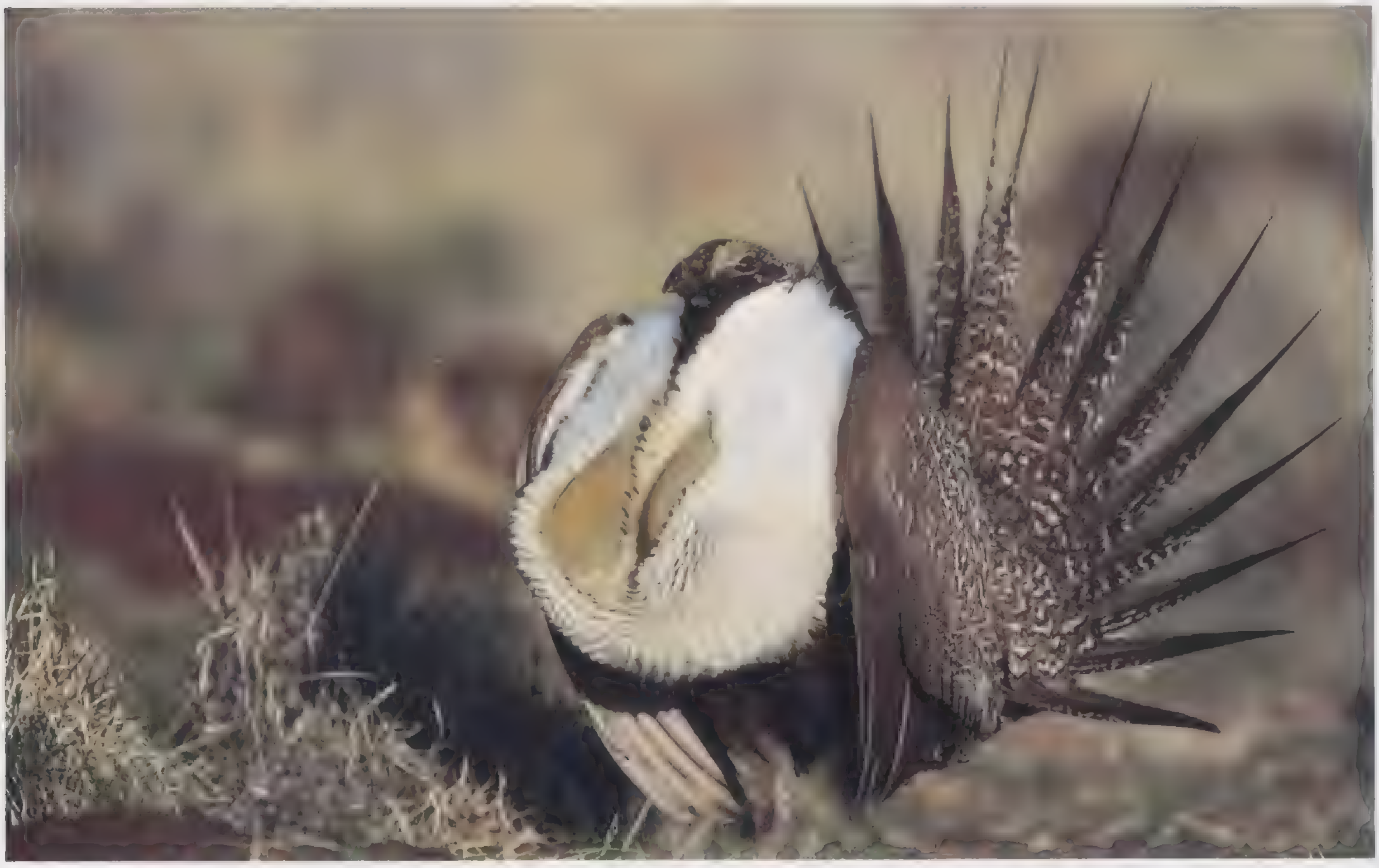
LIFE ON THE LEK

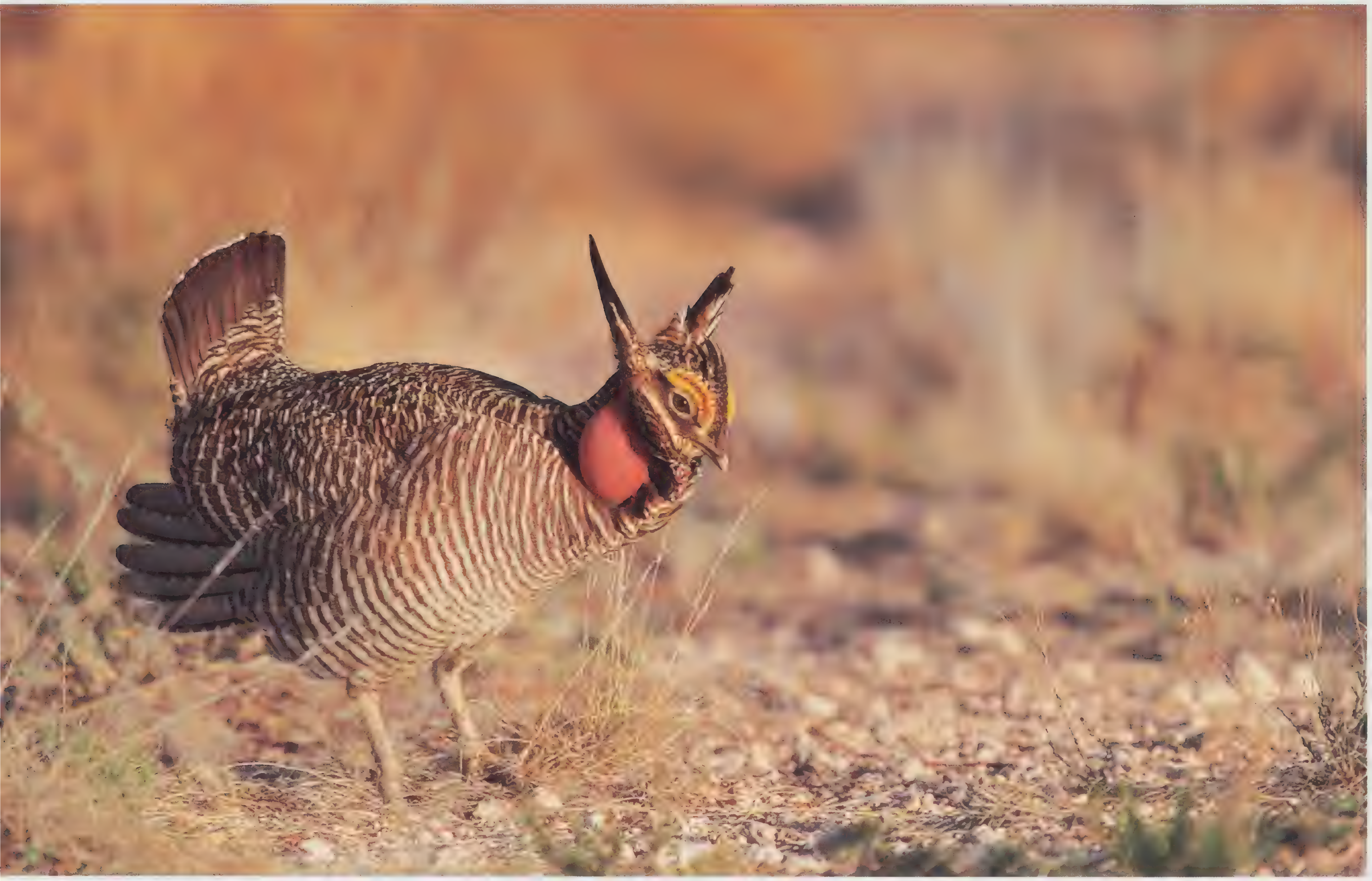
TEXT AND PHOTOGRAPHS BY GARY KRAMER

In search of America's dancing grouse

The pungent aroma of sagebrush filled the crisp mountain air as I headed into the eastern Oregon night, flashlight and camera gear in hand. Stars and distant constellations lit up the clear black sky, adding to my sense of exhilaration. I knew I would soon be sitting in a blind at the edge of a lek, watching Greater Sage-Grouse *(Centrocercus urophasianus)*



The Greater Sage-Grouse is an icon of the West, inextricably tied to its sagebrush habitat, which the species depends on for food and cover. During courtship, the males inflate balloonlike sacs on their breasts and forcefully expel the air, creating loud, bubbling, popping noises.



Male Lesser Prairie-Chickens (above) put on an elaborate show, dancing all over the lek with pinnae feathers erect, tails raised, and colored air sacs so inflated they look like they're about to burst. The males look much different when everything's retracted, facing page.

perform their spectacular courtship ritual.

The anticipation of what I would see helped keep my mind focused as I tried to follow the pieces of orange flagging I'd set up the day before to lead me to the sage-grouse blind at Hart Mountain National Wildlife Refuge. But 15 minutes into the walk I took a wrong turn and lost my carefully marked trail. I wandered around aimlessly in the sagebrush hills, my excitement quickly turning to panic. Then, 30 minutes later and totally by accident, I stumbled on the blind. I barely had time to set up my camera and tripod before the first grouse arrived on the lek.

At first, I couldn't see the birds, but I could hear their distinctive deep, resonating popping noises—made by filling the balloonlike sacs on their breasts and forcefully expelling the air. But as the first tinges of crimson light illuminated the eastern sky, the birds slowly became visible. By the time the sun peeked over the horizon, at least 40 males strutted nearby. Five birds danced right in front of the blind.

I was captivated by the display. At first the males seemed to be putting on the show for each other, but eventually a few hens wandered onto the lek, and the strutting took on a new level of intensity.

Females generally visit the lek for a day or two before the actual breeding takes place. Sage-grouse are polygynous, and only a small percentage of the males on a given lek actually breed. Studies have shown that only 10 percent of the males accomplish 90 percent of the breeding. Even though males stay near each other, each maintains a small territory. When a neighbor's space is invaded, a ritualized fight often breaks out. The males rush each other and stop face to face or side by side with their bodies nearly touching. The standoff may last several minutes until one male makes a move and a fight breaks out. After a few rounds they separate and go back to strutting.

The sage-grouse has long been an icon of the West. The birds are intimately tied to sagebrush and depend on it for food and cover. They survive long cold winters on a diet of 99 percent sagebrush and are the only gallinaceous birds that lack a grinding gizzard—food passes directly from their crops to their stomachs. They range from northeastern California and eastern Oregon to the western Dakotas, north to southern Alberta and Saskatchewan, and south to Colorado and Utah. (The Gunnison Sage-Grouse—recently designated as a distinct species by the American Ornithologists' Union—occurs only in the Gunnison Basin of south-central Colorado.) Sage-grouse have been declining in numbers since the 1950s, but especially during the past 25 years. Urbanization and the clearing of sagebrush for agriculture along with degradation of sagebrush habitats from livestock overgrazing, spraying, and burning have led to their decline. Several state fish and game agencies along with the Bureau of Land Management (which oversees more sage-grouse habitat than any other single agency) are designing habitat management programs to help slow the decline.

A Northern Harrier flew over the lek at

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about 9:00 A.M., flushing a dozen birds. An hour later, almost all the birds had unceremoniously walked off, and the last four flew away at 10:30 A.M. Finding my way back to the pickup in the daylight was a lot easier than finding the blind in the dark. I was thrilled at the success of the day and the unique opportunity to see the extraordinary courtship display of the Greater Sage-Grouse up close.

Just seven days later and several states away, I was in New Mexico, trying to photograph another lekking grouse: the Lesser Prairie-Chicken *(Tympanuchus pallidicinctus).* It was a cold clear night as I walked to the blind I'd set up the day before. This time I only had to go 100 yards on a gleaming gravel road that shone nearly white under a bright moon—there was no way I could get lost. The lek was on the Mesaclero Sands—a 560,000-acre tract of federal, state, and private lands about 45 miles east of Roswell, New Mexico. Here Lesser Prairie-Chickens dance on flat areas set in a landscape dominated by low sand dunes, little bluestem grass, oaks, and scattered yuccas.

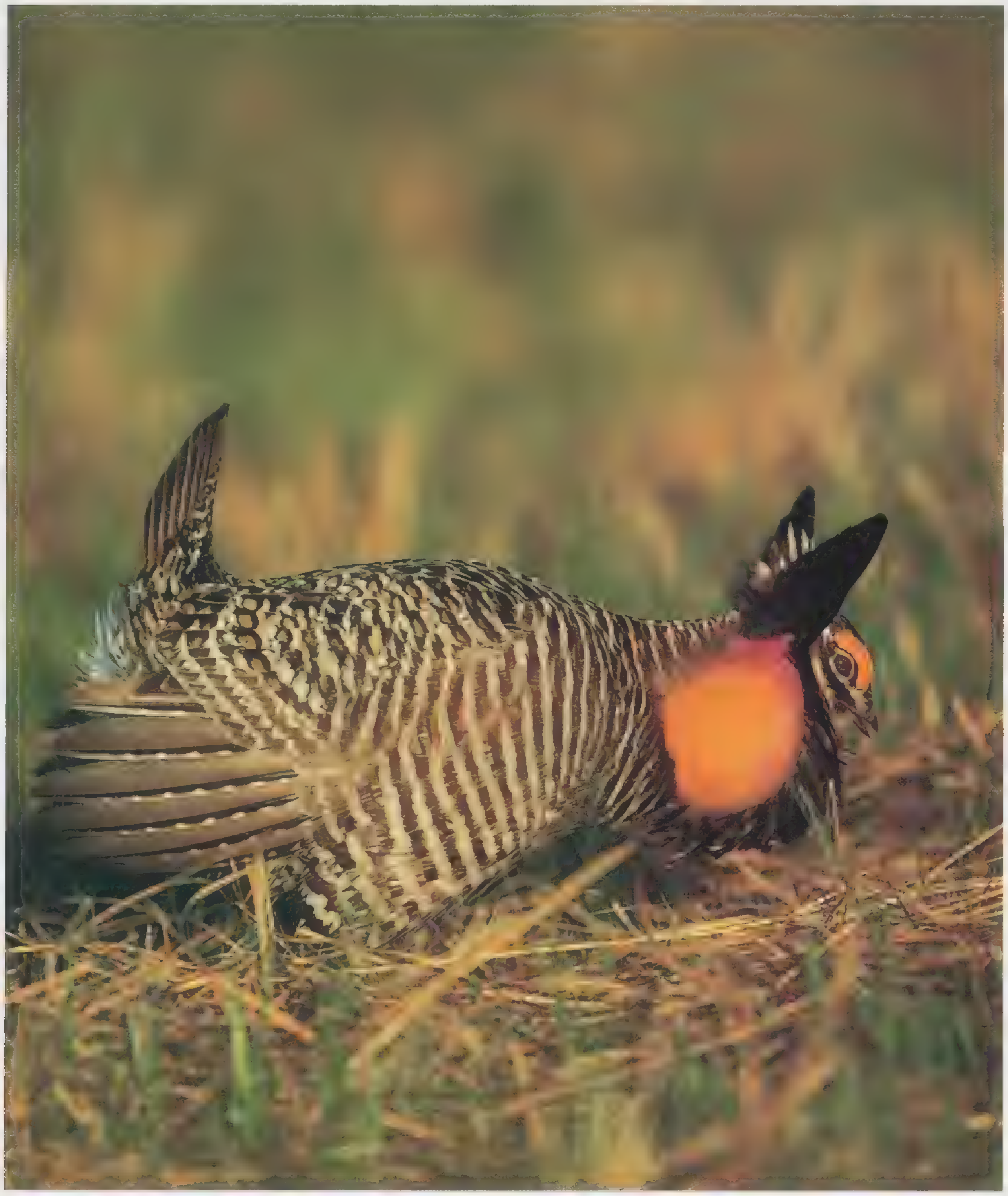
Lesser Prairie-Chickens have a very restricted range and are found only in southeastern Colorado, eastern New Mexico, western Oklahoma, southwestern Kansas, and the Texas Panhandle. Like the Greater Sage-Grouse, their populations have declined significantly for many of the same reasons—loss of native grasslands to farming, urbanization, and livestock overgrazing.

Even though I arrived in the dark at 5:00 A.M., a few males stood strutting on the lek. It's not uncommon for males to dance all night, particularly on moonlit nights. My arrival quelled the commotion for a few minutes, but the birds went right back to their repertoire of hoots, cackles, and burps, as well as stamping their feet and vibrating their wings. By the time the first rays of light touched the sky, two dozen males stood on the lek. Lesser Prairie-Chickens put on a more elaborate show than sage-grouse; instead of strutting in a limited area, they run all over the place stamping their feet and flying into the air. They dance with tails raised, eye combs engorged, pinnae neck feathers erect, and brilliantly colored air sacs inflated to the point they seem like they're about to burst. They also look for high spots on the otherwise flat lekking ground and will jump onto a shrub to get a better view.

After the first day, I moved my blind closer to the action. Two males fought right in front of me on the second morning. They ran 30 yards across the lek toward each other, then stopped abruptly and faced off for several minutes until a fight erupted, punctuated by flapping wings, pecking, and plenty of jumping into the air. I never saw a single female on the lek, so I wondered what all the commotion was about. By 9:00 A.M., most of the birds had wandered off and melted into the grass and shrubs.

My next stop was Minnesota, where I hoped to photograph the courtship display of the Greater Prairie-Chicken *(Tympanuchus cupido)*—a slightly larger version of the Lesser. Greater Prairie-Chickens range from North Dakota and Minnesota south to Kansas and Oklahoma but are most numerous in the tall-grass prairies of south-central South Dakota, north-central Nebraska,

Greater Prairie-Chickens (below and at right) are larger and more darkly colored than Lesser Prairie-Chickens. Courting males emit a deep oo-loo-woo *sound called "booming," which is much like the sound made by blowing across the top of an empty bottle. The booming of the Lesser Prairie-Chicken is similar but higher pitched.*



Although Sharp-tailed Grouse (above and at right) lack the striking neck pinnae feathers of the prairie-chickens, they make up for it with their pointed tails—which stick straight up when they dance—their brilliant purple air sacs, and the dynamic quality of their dancing. "Their foot-stomping was so rapid," says author Gary Kramer, "it sounded like a drum roll."

and eastern Kansas. I went to Minnesota because the birds' dancing grounds there are so accessible. The Nature Conservancy manages the Bluestem Prairie Natural Area near Glyndon, Minnesota, just across the border from Fargo, North Dakota. This reserve supports a healthy population of these birds, and the staff sets up two observation blinds on the lek each spring. The birds are so used to these structures, they often dance within a few feet of the blinds and sometimes even land on top of them.

These birds perform a courtship display similar to that of the Lesser Prairie-Chicken. At least 30 males strutted on the lek, putting on a spectacular show. They were most active just before and immediately after dawn. After that, the action was more sporadic and seemed tied to the antics of other males. As one bird increased his booming and strutting, nearby males would follow suit until the entire lek was full of dancing prairie-chickens. A female ambled onto the lek at one point and almost put the whole group into cardiac arrest. She fed with an air of indifference and didn't seem to notice the dozen eager males surrounding her. They displayed their wares wildly but to no avail. The hen finally walked into the tall grass and disappeared. Even though it was late April and most of the breeding had already taken place, these males still displayed vigorously. Males often stay on the lek well into May, waiting for females to return. These late-arriving females are usually those that have lost their first brood of eggs and are attempting to nest again.

Like Greater Sage-Grouse and Lesser Prairie-Chickens, Greater Prairie-Chickens have gone through a significant population decline, but much of it took place in the early 1940s as agricultural production was stepped up to help support the war effort. Later, intensive farming practices added to the loss or degradation of the birds' habitat. But Greater Prairie-Chickens are far better off than Lesser Prairie-Chickens. The Conservation Reserve Program (CRP)—a federal program that allows unproductive farmlands to lie fallow—has helped restore Greater Prairie-Chicken populations in some areas.

The final leg of my journey took me to Canada, specifically to an area near Minnedosa, Manitoba. Here my quarry was the Sharp-tailed Grouse *(Tympanuchus phasianellus)*—the most widespread of the lekking grouse. Sharp-tails inhabit a diverse array of habitats—grasslands, sagebrush semidesert, brushy montane communities, oak savanna, and brushy sections of boreal forest. They range from interior Alaska through much of Canada to the west and north-central United States. Particularly strong populations exist in the prairie provinces of Canada as well as in Montana, the Dakotas, and Nebraska. Although their numbers have declined because of habitat loss, Sharp-tailed Grouse populations are generally in good shape. The CRP has gone a long way toward helping to restore their populations.

As with the other locations, I arrived the day before and set up a blind beside the lek. Ducks Unlimited biologist Cal Cuthbert had shown me the location of an active lek. It was the smallest one I visited, and when the sun came up, I only saw a dozen birds.

Compared with the other grouse I photographed, the Sharp-tails were remarkable dancers, with movements far more intricate than the prairie-chickens' and more dynamic than the sage-grouses'. Their foot stomping was so rapid it sounded like a drum roll. The birds dipped from side to side, turning in circles as they bowed and spun around. Sharp-tails lack the striking neck pinnae of the prairie-chickens but make up for it with their pointed tails, held erect as they dance, and their beautiful purple air sacs.

Much of the activity took place just before dawn, and I literally counted the minutes until I had enough light for photography. The sun finally broke over the horizon, filling the lek with warm morning light, and I started taking pictures. But only one roll of film into the action, a Prairie Falcon burst out of nowhere in a power dive, hell-bent on catching a grouse for breakfast. The falcon missed, but all the grouse flushed from the lek. I stayed put for an hour and was about to leave when I noticed one of the birds sneaking back to the lek. Minutes later two more birds returned and started dancing all over again. Eventually, all 12 came back and gave me another hour to take pictures before I called it quits.

By the end of April, I had observed and photographed four species of grouse performing on their leks. If not for the recent splitting of the "Sage Grouse" into Greater Sage-Grouse and Gunnison's Sage-Grouse, I would have had a clean sweep of all North America's lekking grouse. Oh well, I guess I know where I'll be going next spring. ■

Gary Kramer is a freelance writer and photographer based in Willows, California.

BIRDING BITTER LAKE

People always talk about how fabulous the birding is at New Mexico's famed Bosque del Apache. But a few hundred miles away at Bitter Lake National Wildlife Refuge you can find a similar array of bird species without having to share the experience with so many other visitors. Above: "In the fading light, our last sight was of even more arriving cranes."

TEXT BY MARCIA BONTA
PHOTOGRAPHS BY MARIE READ

A tour of New Mexico's "other" wildlife refuge

Nothing we had experienced earlier had prepared us for the day's finale. Although we had heard and seen occasional Sandhill Cranes throughout our visit, it hadn't occurred to us to expect more than the few dozen we had counted on a nearby pond. But as we stood watching from the side of the road, several hundred Sandhill Cranes flew in and landed on a mudflat in front of us. Then several hundred more cranes joined them. We thought we had seen them all, but suddenly lines of cranes, as far as we could see, wavered across the sky like plumes of smoke, their loud, rattling calls announcing their arrival as they settled on the mudflat and adjacent ponds. For more than 15 minutes we watched as they kept streaming in. The mudflat was a solid gray wall of cranes, and still they came. In the fading light, our last sight was of even more arriving cranes.

That day, in mid-October, my husband Bruce and I were the only witnesses of the cranes' sunset flight into southeastern New Mexico's Bitter Lake National Wildlife Refuge, as the birds returned after a day of foraging in the Pecos River Valley fields. Later, we learned that a large portion of the world's population of Lesser Sandhill Cranes winters there. According to Refuge Manager Ken Butts, the cranes had arrived earlier than usual from their nesting areas in the central Arctic and Canada, and we had witnessed the peak population of 15,000.

Set in a transition zone between the Chihuahuan Desert and the short-grass prairie in the Pecos River Valley of south-

During fall and winter, Bitter Lake has huge concentrations of Sandhill Cranes and waterfowl—such as these Northern Pintails (above). On her visit in mid-October, author Marcia Bonta spotted 19 species of waterfowl and other birds at a single lakeside stop.

eastern New Mexico, this 24,500-acre refuge holds a bird-pleasing mixture of natural wetlands, riparian corridors, cropland impoundments, and desert uplands that has attracted not only the cranes but 351 other bird species over the years. It is, for instance, the only place in New Mexico where the endangered Least Tern nests. The terns nest on the dried mudflats beside Bitter Lake, a natural lake that was given its name by local ranchers in the 1800s because of its bad-tasting alkaline waters.

Gordon Warrick, a wildlife biologist at the refuge, says that the year 2000 was a great one for the terns. A dozen pairs raised 16 chicks. He hypothesizes that the fledglings from the seven pairs in 1998 helped to boost nesting rates because Least Terns start breeding in their third year and are faithful to their nest sites if the habitat is not damaged.

At Bitter Lake the terns have a lot of excellent nesting habitat to select from, which probably contributes to their higher than usual nesting success, and the habitat is well maintained by the refuge staff. They also protect the tern colony by keeping people away from the nesting areas during the breeding season. Even researchers keep their distance, watching the birds' nesting activity through scopes.

Least Tern colonies in the interior of North America generally range from five to twenty pairs, each of which produces two or three chicks per year. Because of predation by birds and mammals as well as human disturbance, however, chick survival rates in most places run slightly more than half a fledgling per pair, so Bitter Lake's success rate is well above average.

Snowy Plovers also breed at Bitter Lake. Even though this species lives on every continent but Australia and Antarctica, only about 21,000 Snowy Plovers exist in the United States. Their coastal habitat is shrinking rapidly as more and more people flock to beaches along the Gulf and Pacific coasts. The West Coast population has been designated as threatened by the U.S. Fish and Wildlife Service. But Snowy Plovers, like Least Terns, can also nest on sparsely vegetated or barren interior alkaline or saline lake shores.

Although the Least Terns and Snowy Plovers had already migrated south to the beaches

of Mexico, Central America, and—in the case of the terns—as far south as southern Brazil and northern Argentina when we visited, we did see a marvelous mix of waterfowl, shorebirds, raptors, and even songbirds. Happily, for the first time in our lives, we were toting a scope as well as binoculars. After 30 years of living on a central Pennsylvania mountain and watching mostly songbirds through binoculars, we were determined to become waterfowl and shorebird watchers also. Bitter Lake, known for its huge concentration of ducks, Snow Geese, and Sandhill Cranes during the fall and winter months, seemed an excellent place to start honing our skills.

After pulling into the entrance kiosk, signing in, and picking up brochures and a bird checklist, we drove slowly along the eight-mile auto tour road. As soon as we stepped out of our car at the first stop, we were overwhelmed by the sight and sound of birds. Flocks of Barn Swallows seined the air for insects. Sandhill Cranes bugled in the distance. Dozens of White-crowned Sparrows and a single Song Sparrow sang in the shrubby grasslands while a Loggerhead Shrike perched on the tip of a nearby shrub. Then a Northern Harrier zoomed past low and silent like a stealth bomber and landed on a dead shrub. The piercing calls of Killdeers rang from the mudflats below the elevated overlook.

We set up our scope and peered at a Long-billed Dowitcher probing for food in a shallow pool. Nearby a Black-crowned Night-Heron stood motionless in the dried grasses. Best of all, though, was a large lake blanketed with waterfowl. One of six major impoundments developed by the refuge since the 1940s and strung out like pearls along the ancient river bed of the Pecos River Valley, this lake is fed by springs and does not dry up in summer as do so many others.

On that day the lake held a bewildering array of waterfowl and other birds—an American White Pelican, a Western Grebe in the middle of a huge flock of Mallards, a foraging Snowy Egret, and smaller flocks of Canvasbacks, Redheads, Ring-necked Ducks, Northern Shovelers, Gadwalls, and American Coots. Nineteen species at one stop seemed almost too good to be true.

But at the second elevated stop, the viewing was just as exciting. Forty American White Pelicans floated on the water, all grooming themselves. An enormous flock of Northern Pintails also claimed a large portion of the pond. On the mudflats, Greater and Lesser yellowlegs and Least Sandpipers foraged for food.

Even driving was an adventure; we had the entire refuge to ourselves and could stop whenever we wished. We braked for the Greater Roadrunner that ran along the road and into a shrub, where it posed for us. We also braked when 34 pelicans flew above our car, their white backs catching the sunlight. The pelicans soared on thermals, rising and falling in succession and dazzling us with their graceful movements.

Two Northern Harriers swooped into shrubs

White-crowned Sparrows (above) are common at the refuge and can be heard singing in the shrubby grasslands and brush. Greater Roadrunners (below) prowl the road edges and scrub, foraging for insects, lizards, snakes, rodents, and small birds.

beside the road. Periodically, throughout the day, we were treated to close-up views of hunting harriers, and we wondered if they were the same birds each time. Warrick told me later that the refuge supports between eight and ten harriers throughout the year. Certainly they were the most visible of the raptors during our visit, but we also had a distant view of a Ferruginous Hawk, sitting in the dried grasses, its diagnostic red leggings visible through our scope, and along the road a dark-morph Red-tailed Hawk perched on a shrub.

At stop number three, a Western Meadowlark sang in the grasses, one of many we heard and saw. The impoundment itself was a sea of American Coots and Mallards, but a little scope work brought in a couple of Hooded Mergansers. This particular impoundment is actively managed and water levels vary throughout the year. In spring and fall the water is kept shallow to attract migrating shorebirds. During summer, it may disappear altogether, exposing mudflats and playas for nesting terns and plovers as well as Black-necked Stilts and American Avocets. In winter all the lakes are full of water to provide habitat for waterfowl, which can include some 20,000 Snow Geese, a spectacle we were too early to see.

The refuge staff also manages the grasslands, using controlled burns to recycle nutrients and energize the native grasses, which may be why the refuge has such a diversity of sparrow species—including Cassin's, Lark, Savannah, and Brewer's sparrows—and both Eastern and Western meadowlarks. Another major project of the staff is removing the salt cedars from uplands, sinkholes, and streamsides, because this exotic tree decreases water flow and deposits salt in the soil.

To keep the wintering cranes and waterfowl fed, 2,000 acres of the refuge are devoted to cereal grain farming. In addition, the staff grows aquatic plants in the summer to provide food for waterfowl in fall and winter.

All of this effort pays off in bird numbers and diversity. We marveled over a pool filled with American Wigeons and Northern Pintails and admired a Great Egret as it flew overhead. Then we reached a new boardwalk that leads

to a large, wooden blind, complete with an excellent mounted scope. Before us was a large pond filled with pintails and coots. A Pied-billed Grebe swam past, and we had a fantastic view of a preening Western Grebe. Three Snowy Egrets fed with 11 White-faced Ibises at the edge of the pond while a Great Blue Heron foraged in the mudflats beyond. So hidden were we that a coyote neither saw nor scented us, and we watched it hunting around the blind and boardwalk for nearly half an hour.

We completed the auto tour by lunchtime and started over again, revisiting our first stop with its elevated picnic tables and panoramic view. Bruce set the scope up on the table, and we took turns looking at a stalking Great Egret, American Wigeons, coots, and harriers as we ate our bag lunch. This had to be one of the more interesting and exciting lunch places we have ever visited.

Then we headed back to the Oxbow Hiking Trail between stops three and four. This recently expanded, one-and-a-half mile sandy loop trail leads through shrubby grasslands and wetlands to the Pecos River. On the trail we were continually serenaded by the ubiquitous White-crowned Sparrows and Western Meadowlarks and had excellent views of them along with flocks of Dark-eyed Juncos. A gray-backed Rock Wren foraged amid prickly pear cactus and dried grasses and a "red-shafted" Northern Flicker flushed from the ground. From the end of an overflow pipe near the Pecos River, a Great Blue Heron burst into the air, startling us. A Say's Phoebe

In summer, the refuge's wetlands provide breeding habitat for Black-necked Stilts (facing page), American Avocets, Least Terns, Snowy Plovers, and more. Above, a Western Grebe preens its feathers. The distinctive bubbling, flutelike song of the Western Meadowlark (left) is heard throughout the grassland areas of Bitter Lake.

The Say's Phoebe (above), a western specialty, is fairly easy to spot in the dry, open areas of the refuge, where it often perches on bushes and flies out to hawk insects.

perched on a dead branch and then rose in a fluttering flight.

Our best sighting, though, was an American Avocet that flew toward us on the sandy road back. Although avocets breed at Bitter Lake, they spend their winters along the Gulf and Pacific coasts. The American is the only avocet in the world that changes color in the breeding season—their heads and necks turning from neutral gray color in fall and winter to rich cinnamon in spring and summer—but these birds are unmistakable in any plumage with their handsome, black-and-white, chevron-patterned backs, long, bluish legs, and distinctive recurved bills.

By late afternoon we were pulled irresistibly back to the blind. Rafts of Ruddy Ducks, Redheads, and coots swam in the pond. Then we spotted two Common Loons swimming by themselves, a rare sighting at the refuge during fall. A pair of Double-crested Cormorants preened at the edge of the pond and then held their wings out to dry like Anhingas. Piercing screams nearby turned out to be the advertising calls of the elegant black-and-white Western Grebes.

When the sun set, we reluctantly left the blind and walked slowly back along the boardwalk to our car. And as we stood in the gathering dusk, the grand spectacle of the returning cranes began. Thousands of them came streaming in, overwhelming us with their vast numbers—the perfect end to a magical day.

Marcia Bonta is a freelance writer who specializes in nature and outdoor subjects.

FURTHER INFORMATION

Bitter Lake National Wildlife Refuge is open every day from one hour before sunrise to one hour after sunset. It is located approximately 10 miles northeast of Roswell—a small, vibrant city, best known for its International UFO Museum and Research Center. It has several nice restaurants and many motels from which to choose. To reach the refuge from Roswell, take U.S. 285 (Main Street) north to Pine Lodge Road, just past the commercial district. Turn right and drive eight miles east to the refuge.

In addition to the middle unit, which features the auto tour, the 9,620-acre Salt Creek Wilderness to the north is open for day hikers. The Lake St. Francis, Bitter Lake, and Inkpot Research natural areas—which include several blue gypsum sinkholes that provide habitat for the endangered Pecos gambusia and 23 other rare fishes and a rare marine algae that normally inhabits the lagoons of the Gulf of Mexico—are open only to scientific and educational groups that have contacted the refuge in advance. In late August and September the refuge glows with masses of Pecos puzzle sunflowers that thrive in the alkaline wetlands.

Sometimes the tour road is closed because of adverse road or weather conditions, so be sure to contact the refuge office at (505) 622-6755 before visiting. For brochures and checklists, write to Ken Butts, Refuge Manager, P.O. Box 7, Roswell, New Mexico 88202; web site: <http://southwest.fws.gov/refuges/newmex/bitter.html>.

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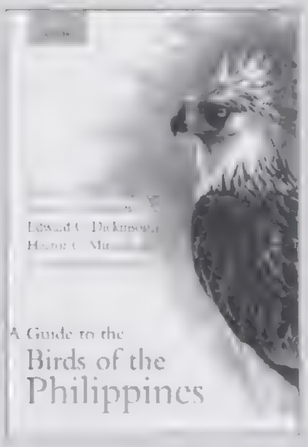

The Birds of Ecuador
Volume I: Status, Distribution, and Taxonomy
Robert S. Ridgely and Paul J. Greenfield
Cornell University Press; published 2001; paper
Detailed information on the ecology, status, and distribution of the nearly 1600 species of birds found in Ecuador.
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132 pages; paper with CD-ROM
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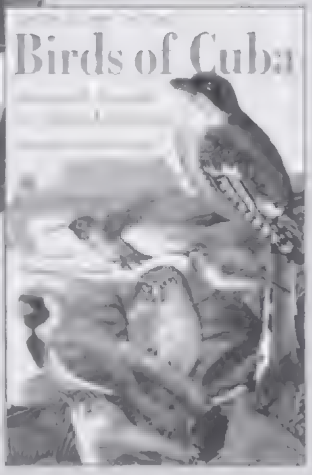

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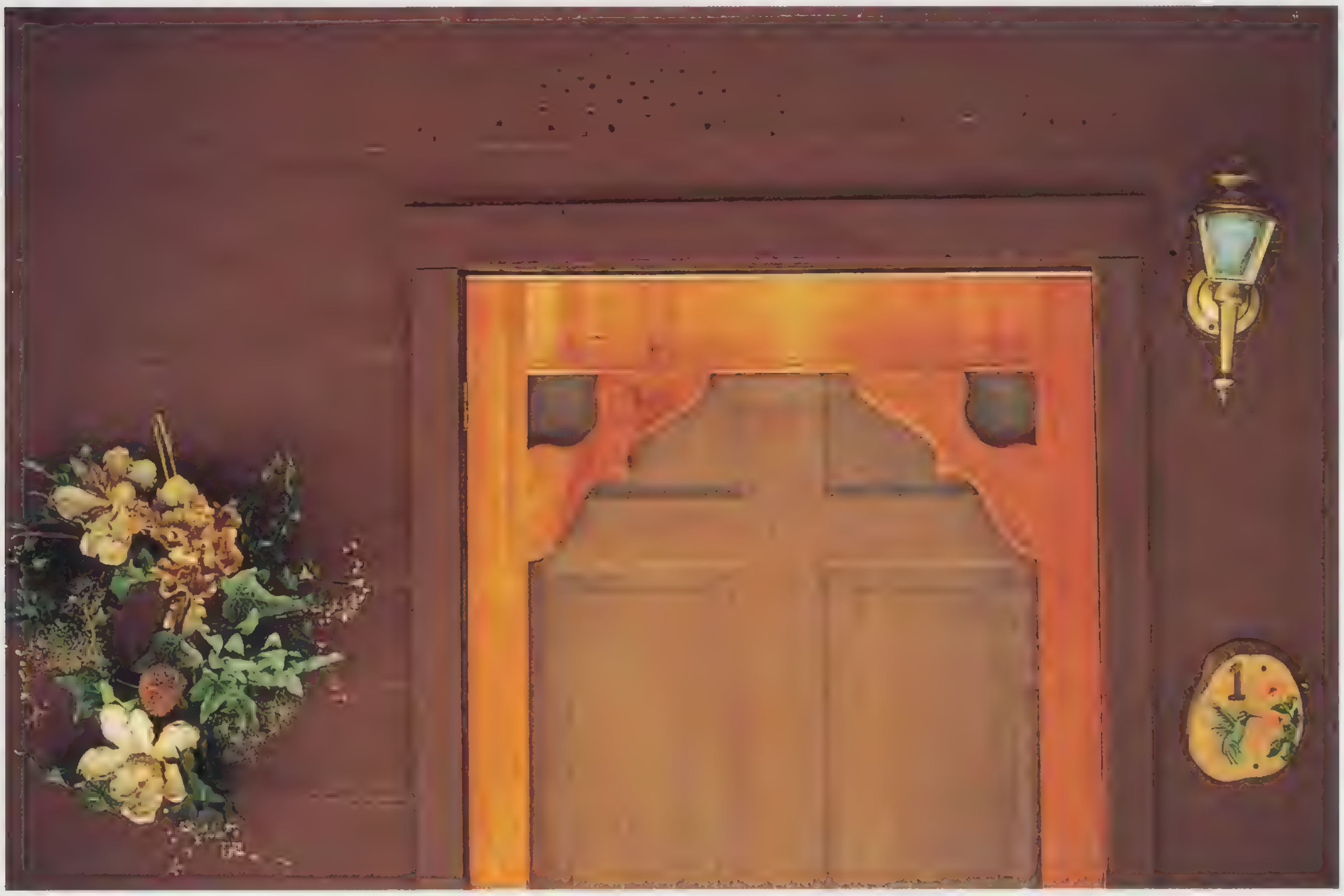
The Hole in the Wall Gang

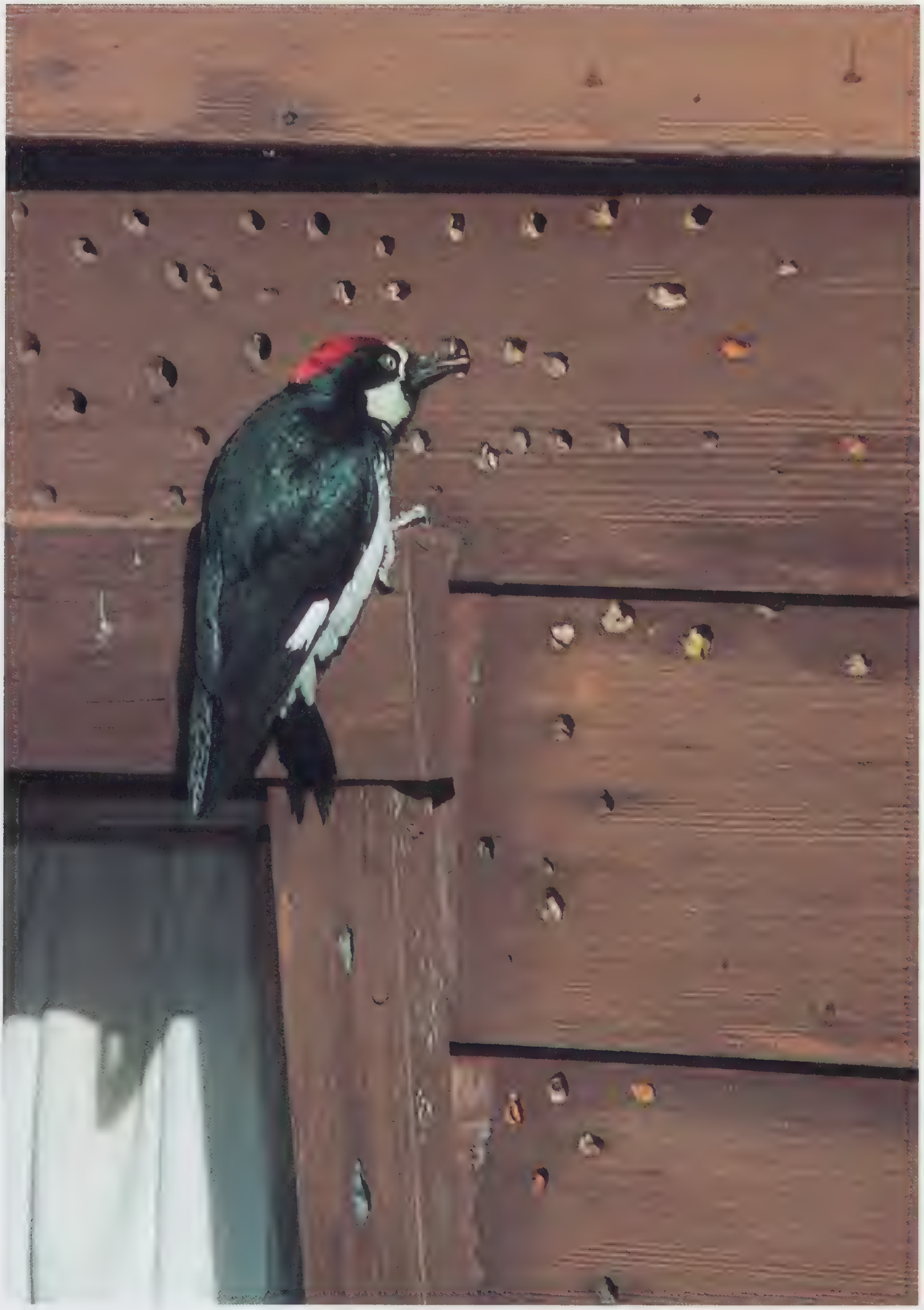
TEXT AND PHOTOGRAPHS BY PAUL ZIMMERMAN

Who's that knocking at my door?

Birders spending a few autumn days at the Santa Rita Lodge Nature Resort in Arizona's Madera Canyon sometimes comment that someone was rapping at their cabin door early in the morning, but disappeared when they got up to see who it was. David and Lyle Collister, the owners of this birding hotspot a few miles southeast of Green Valley, assure the visitors that no human was disturbing their slumber; it was an Acorn Woodpecker (*Melanerpes formicivorus*) tapping an



The loud rapping was not a human visitor—just an Acorn Woodpecker (far left) tapping another acorn into one of the many holes it has bored in the wooden siding of a cabin in Arizona's Madera Canyon.



bers of the group have free access to the cache. They defend the granary from pilferers such as squirrels, nuthatches, titmice, and the like and guard their territory from neighboring Acorn Woodpeckers and other interlopers.

This team effort is carried to a highly unusual extreme in what is one of the rarest breeding arrangements known—in some populations males and females do not form pairs, but rather cobreed, the breeding males mating with any and all of the breeding females. The cobreeding females lay their eggs jointly in the cavity selected as the group's communal nest site. Cobreeders of the same sex are usually closely related—siblings or a parent and offspring. Thus a male and his two sons may mate with the same females, and mate-sharing females may be sisters or mothers and daughters. Males acquire a brood patch and share with incubation. The breeders, along with nonbreeding helpers in the group—offspring from previous years—all participate in feeding the chicks.

Seemingly, then, these woodpeckers are the epitome of affable interdependence. Yet at the same time, they possess behavioral characteristics that are the antithesis of sociability, impelled by each bird's primal instinct to ensure that its own genes are passed to succeeding generations.

In one such behavior, joint-nesting females methodically destroy one another's eggs. Scientists at the Hastings Natural History Reservation in Carmel Valley, California, who have been studying this woodpecker continuously since the early 1970s, regularly observe that when one of the females lays the first egg it is likely to be removed by another female. When that female then lays an egg, her cobreeder removes the egg, and so on, in a process that may go on for several days or more.

The removed egg is often taken to a crack in the bark of a nearby tree limb, whereupon the egg is pecked open and the contents eaten by members of the group. The basis for this egg destruction is the likelihood that chicks

acorn into one of the many storage holes it had bored over the cabin doorway.

Over the doorway? Typically, this frugal woodpecker drills holes in the trunk and limbs of a dead tree in which it stores acorns during fall, hoarding them against the coming winter when other food sources are scarce.

A resident of our western and southwestern mixed oak woodlands, most Acorn Woodpecker populations consist of nonmigratory family groups of from several birds to 12 or more of both sexes and of varying ages. The group collectively builds the hoard of acorns in the storage tree, called a granary, and all memhatched from eggs laid early have the best chance of surviving. Thus the female that removes eggs laid before her own increases the odds that surviving offspring will be hers, rather than those of a joint nester. Usually this cycle of egg destruction ends once the females start laying simultaneously. Then incubation begins.

Similar harsh reproduction competition may take place later in the nesting season if the sole breeder of either sex in a group has died or otherwise disappeared while the nest cavity has eggs or young. If a bird from outside the group arrives and is accepted by members of the opposite sex in the group, it may destroy the eggs or nestlings of its predecessor. When nestlings are removed from the nest, they may also be eaten by the group. The newcomer thus forces the group to breed again, ensuring that its genes are passed on.

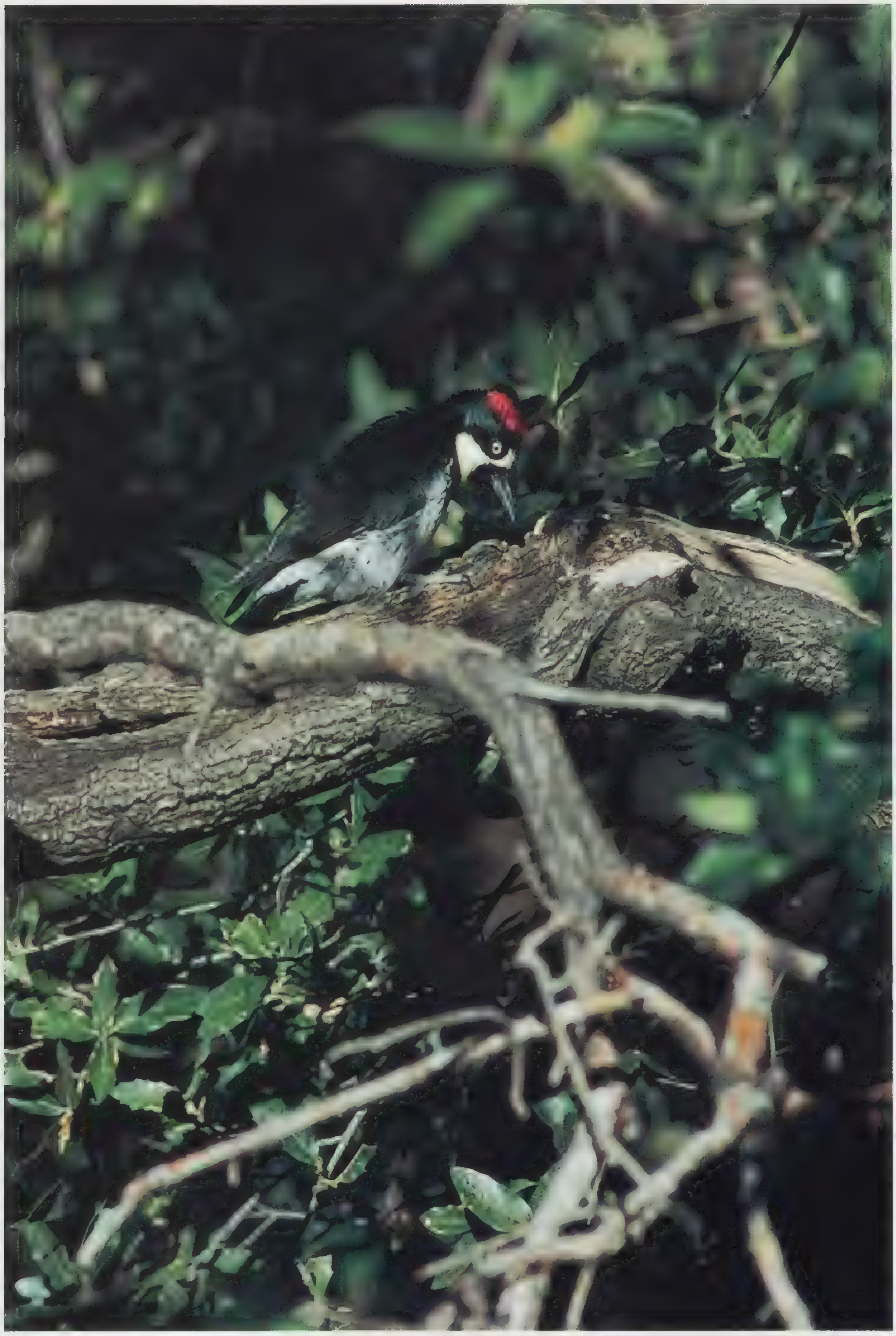
Less severe but nevertheless intense power struggles occur outside the group, between nonbreeding helpers pitted against helpers from other territories. Such helpers regularly reconnoiter groups outside their territory, looking for the opportunity to attain breeder status, because such opportunities occur infrequently in their natal group without incestuous matings.

One opportunity to become breeders outside their natal group arises when only a single aging or weakened breeder remains in another group. Then bands of young birds of that sex arrive from neighboring groups and try to oust the remaining breeder. Similarly, when all breeders of a particular sex in a neighboring group have died or disappeared, gangs of young birds of that sex from adjacent territories converge on this group and battle it out to fill the vacancies. Dozens of birds may be involved in such contests, which may go on for a week or more. Competitors chase and peck each other, grappling in aerial fights so intensely that both may tumble to the ground momentarily. The winners assume breeding status there, and losers return home to resume their roles as nonbreeding helpers.

The reason such contests occur and why helpers may stay with their natal group for several years is that the young of the year cannot readily go off and start their own group because of two constraints. The first is habitat saturation: desirable habitats are usually continuously occupied and defended by entrenched groups. The second is the birds' dependence on a granary. Although insects caught flycatcher style or gleaned from tree limbs are the preferred food of these birds, acorns still constitute approximately 50 percent of their diet. In winter, when various other food sources wane, this figure rises to perhaps 90 percent.

Being able to store sufficient acorns in the fall is essential to winter survival and to the success of their nesting efforts the following spring. Indeed, a failure of the mast crop in an area could force a group to abandon its

Acorn Woodpeckers typically build up a vast hoard of acorns in a storage tree, called a "granary" (at left). But sometimes these energetic birds take advantage of human-built structures, creating storage sites in various sheds and houses (facing page). In winter, when insects are scarce, these stashed acorns become a vital food source, making up perhaps 90 percent of the birds' diet.



To eat an acorn, the woodpecker takes it to an "anvil"—usually a crevice in the top of a horizontal limb, where it wedges the nut before pounding it with its bill and splitting it in half.

territory. One study suggests that a group consisting of five birds might drill 500 holes in a single year, and a granary of 4,000 holes is considered modest. So young birds cannot fly off and create a granary in short order and thus are constrained from dispersing into another area unless it has an established granary.

As soon as acorns become available in fall, these woodpeckers begin harvesting them. Initially, a good number of them are eaten on the spot; later the birds focus on storage. Ripened nuts that have fallen to the ground are rarely picked up. These birds get them directly from the tree. Alighting amid a cluster of acorns, the bird grasps one with its bill, tussles to free it from its retaining cup, twisting and tugging until the acorn comes loose.

If the woodpecker wants to eat the acorn, it flies with it to one of its "anvils"—usually a horizontal limb with a natural crevice on top into which the bird can wedge the nut. A few whacks with its bill punctures the shell; then the bird gives a deft twist of its inserted bill and the nut splits in half. The bird then breaks the nutmeat into bite-sized pieces and eats them.

If the acorn is to be stored rather than eaten, the bird brings it to the granary tree and drives it into a vacant storage hole. The preferred locations for such holes are the undersides of limbs and similar partially sheltered areas, but eventually the entire tree may be riddled. An unusually large granary may contain upwards of 30,000 holes, the aggregate result of generation after generation of the family group continually expanding the granary's capacity by drilling additional holes each year.

Despite the plenitude of oak, pine, and sycamore trees surrounding the Santa Rita Lodge and dotting the mountainsides, the Acorn Woodpecker group there has apparently decided that the shelter offered by the overhanging eaves and porch roofs of wooden cabins make the outside walls of these buildings attractive granary sites. Most of the walls are riddled with holes, ranging in number from a few scattered ones to several hundred. These birds are seen regularly throughout autumn as they swoop in with an acorn, alight over a doorway or on one of the walls, and *rat-a-tat-tat-tat* the acorn into the hole. ■

Paul Zimmerman is a freelance writer and photographer based in Tucson, Arizona.

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In the Field

MASTERS OF MACHO

by Jack Connor

Noisy, gregarious, and all too numerous, grackles are impossible to ignore

Do you remember your first grackle? I didn't think so. Most birders rank grackles somewhere close to feral pigeons, squirrels, and traffic noise on the pleasure spectrum. For novices and nonbirders, grackles seem to epitomize ugliness in birds: they are dark, gregarious, loud, and far too numerous. They are often confused with starlings, crows, and even the deadly attackers in Alfred Hitchcock's 1963 horror classic. One February afternoon a neighbor stopped me while I was walking my dog and pointed into a sycamore tree, which was hosting a couple of hundred clicking, chattering, squeaking grackles. "Look at that," he said. "Now I understand why those people in *The Birds* had to run for their lives." A few days later, he repeated the gesture: same tree, same noise. "They've been coming back here every day for a week," he said. "When are they going to go away and leave us alone?"

And even though I claim to be a fan of grackles, they generally do not find a place on any of my birding wish lists. Getting off the plane in Costa Rica, on my first trip to the tropics, I walked out into the airport's sunshine, notebook and field guide ready, wondering what would be the first bird. Toucan? Motmot? Harpy Eagle? Ouch, it was a grackle . . . as was the second bird, the third bird, the fourth bird, and soon thereafter, the fifth, sixth, seventh, and eighth birds. Grackle, grackle, grackle, grackle. When a Turkey Vulture finally floated into view overhead and broke the streak at 12, my spirits revived. Maybe tropical diversity wasn't a myth after all.

I don't remember the first grackle I ever identified, don't remember when I first learned to distinguish Boat-tailed Grackles from Common Grackles—and I sometimes still forget how to do it. But I do remember the first grackle that ever grabbed my attention.

He was a male boat-tail perched on a windowsill at the University of Florida Library in Gainesville. This must have been 1975 or 1976, and I was a beginner raw enough to wonder why a bird would be two floors up from the ground, dancing a dance that seemed directed at someone or something on the other side of the glass. Who or what was prompting all that squeaking and clacking, and so much shaking and ruffling of feathers? And why did he keep striking that odd pose with tail fanned low and wide, neck stretched high, and bill pointed straight up? Who or what could possibly be impressed by that weird posturing?

Soon I noticed boat-tails were performing that same routine next to windows and other glass surfaces all around Gainesville, and I eventually realized the truth. The grackles weren't looking through the windows; they were going eyeball-to-eyeball, bill-against-bill, with their own reflections. Their agitation was self-induced.

And, apparently, downright dumb. Anyone searching for an image of a dumb bird need look no farther than a grackle sky-pointing at its own image. It is hard to think of a more fruitless, wasteful behavior. And boat-tail males may seem even dumber when you learn that they—like the males of many of their closest relatives, including Great-tailed Grackles, Red-winged Blackbirds, Tricolored Blackbirds, Yellow-headed Blackbirds, Brown-headed Cowbirds, Bronzed Cowbirds, and other members of the Icteridae family—spend much more time displaying to fellow males than they do to females, their potential mates.

From fall through winter and deep into spring you will find single-sex flocks of each of these species. Males often associate with fellow males, and females with fellow females. In most grackle and blackbird species the males return to the nesting grounds several weeks—sometimes even months—ahead of the females. Early in the "breeding" season, long before any actual breeding could possibly occur, the males spend much of each day perched at the top of a tree or shrub performing their "mating" displays. Day after day, week after week, red-wing males raise their epaulettes and sing that song of spring: *chonkareeeee!* Meanwhile, boat-tail males click, squeak, and sky-point. In both cases dozens of different males can repeat the routines hundreds of times in a morning without a single female in sight. The only observers paying attention are the other displayers. Male red-wings regularly agitate each other so much that one will fly at another to chase him from his perch. Male boat-tails also chase each other from perches, but they frequently substitute a slower-boil form of intimidation: they sidle right up to a rival on his perch, match his posturing gesture-for-gesture, and try to stare him down.

Which is why, I suppose, boat-tails are so susceptible to being fooled by their own reflections. Rather than try to chase away a rival who perches nearby, they attempt to outlast him. Unlike a flesh-and-blood rival, however, the optical-illusion rival refuses to back off.

But why all this male-to-male fussing in general? Why all this machismo in grackles, blackbirds, and other Icteridae? How can these males afford to waste so much time doing nothing but trying to intimidate one other?

“Early in the ‘breeding’ season, long before any actual breeding could possibly occur, the male grackles spend much of each day performing their ‘mating’ displays.”

BOAT-TAILED GRACKLE BY MARIE READ

The answer comes, as you probably have guessed, from the female side of the equation. Nature has blessed—or cursed—the females of many Icteridae species with the resources and abilities to care for their young with little or no help from their male counterparts. Red-winged Blackbird males never help build their nests, incubate the eggs, or brood the young, and only in a few populations do they help feed the chicks. Most of their time is invested in protecting their harems from the intrusions of neighboring males—and trying to invade the neighbors’ harems themselves. Boat-tailed Grackle males and Great-tailed Grackle males are even less helpful, leaving all nesting and caretaking tasks, including the feeding of the chicks, to the females alone. The males’ sole parental role is sexual, and once the breeding begins, they spend much of each day chasing after females and attempting to mate as frequently as possible.

At the boat-tail colony nearest my house on the Mullica River, it is intriguing to see how quickly the scene changes once the females arrive on site. The males appear there around the first of March and display only to each other for five weeks, until the first week of April, when the first few females appear. For a day or two after that, the males continue with male-to-male posturing, and then suddenly one morning, the sexual chasing begins. In their informative and beautifully illustrated book *New World Blackbirds* (Princeton University Press, 1999), Alvaro Jaramillo and Peter Burke describe what seems to me the courtship sequence most common in boat-tails, “where one or more males slowly chase a female. In this ritualized sequence, males purposely lag behind females, even though they are able to catch up if need be. A female may land and let a male catch her . . . mating [then] tends to occur immediately.”

If male grackles are the masters of macho, females are masters of efficiency. Mating is brisk and businesslike. Nest-building begins immediately and egg-laying and incubation follow shortly. In fact, the true mating season seems to last only a couple of weeks. By May, sexual chasing is over, copulations end, and through the rest of summer, the females dominate the scene. A few males linger into late May or early June, apparently in hopes of copulating with the last few fertile partners, and then they too apparently desert the colony.

Because the habitat is so rich with food and their nesting sites so well-protected, female boat-tails can protect their nests and feed their young simultaneously, which frees their mates (and eventually their sons and grandsons) to live the posturing lives of polygynists. In a sense, the females’ self-sufficiency makes them “enablers” for their mates’ polygyny. Since the father’s offspring can survive his leaving the mother, the father must desert his partner to search for other mates. He would be losing opportunities otherwise.

The logic of this strategy sounds circular, but in the Darwinian world of sexual selection, it is sound. ■

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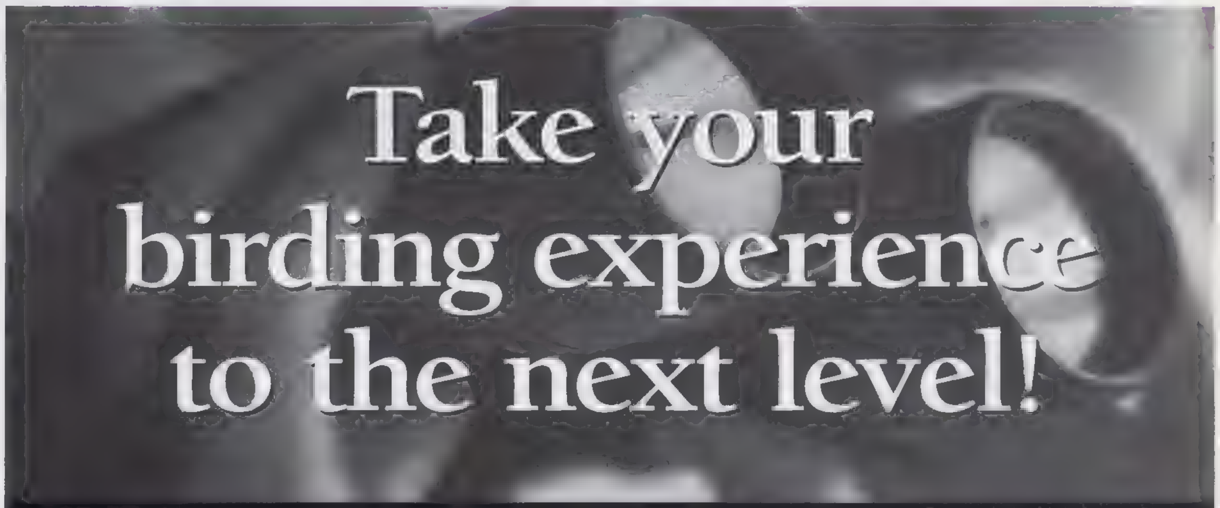

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ON A MUDFLAT

by Pete Dunne

SCENE: *A mudflat at a typical coastal hotspot with an assortment of gulls, terns, shorebirds, discarded tires, Styrofoam floats, and beer bottles. Poised behind spotting scopes stand three typical birders.*

TIM: Oh my gosh!

BILL: What?

TIM: Oh my GOSH!

BILL: WHAT?

TIM: Are you looking at what I'm looking at?

BILL *(chuckling)*: Obviously not.

TIM: That plover on the left. Second bird from the rightmost dowitcher. You got it, Saul?

SAUL: Yes. I've been studying it.

BILL: You mean the golden-plover?

TIM: Yes . . . but look close. See the problem? It's just not right.

BILL: What's not right?

TIM: Well . . . look at the flanks. They're all white except for some black.

BILL: It's August. The bird's molting.

TIM: Well . . . look at the stance. It's kind of erect but with a hunched quality, and the body is round but with a definite sense of squarishness about the head, middle, and . . . THERE. Did you see that?

BILL: See what? The bird scratching its neck? What of it?

TIM: Everything! American Golden-Plovers hardly ever drop their shoulders to scratch and never so much that they look like that's what they're doing. This bird clearly dropped its shoulder, like a shopper laden with packages pushing her way through a revolving door. I've never seen an American Golden-Plover project a shopperesque GIZZ like that. Have you?

SAUL *(pensive)*: Hmmm.

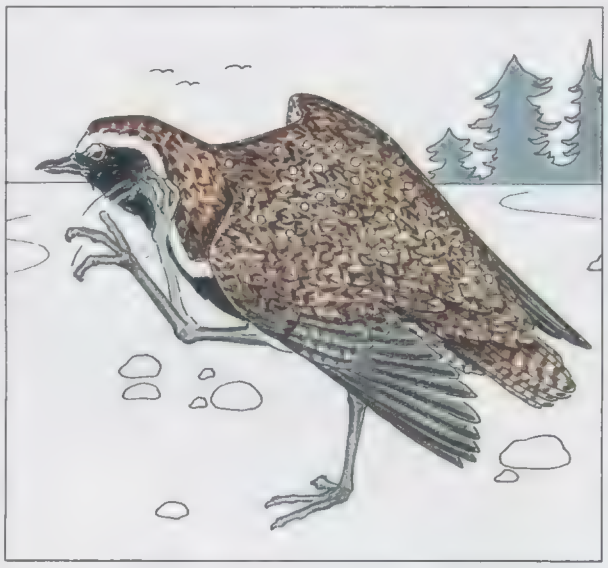
BILL: You're saying this is a Pacific Golden-Plover?

TIM: No. I mean I think we should consider the possibility that this is something really, interesting . . . something more in line with a transoceanic vagrant than . . .

BILL: ARE, YOU SAYING THIS IS A EUROPEAN GOLDEN-PLOVER?

TIM: No. I'm just saying there are enough things different about this bird that the possibility of it being a European Golden-Plover is worth considering.

BILL: It looks about like every other molting golden-plover I've ever seen. Saul, tell him. You see anything about this bird that makes you think it's anything but an American Golden-Plover in alternate plumage going into the first stages of molt?



SAUL: Well . . .

BILL *(interrupting)*: There's no accepted record for European Golden-Plover in this state and only one record south of the Canadian Maritimes.

SAUL *(continuing)*: What's interesting about this bird is the squarish shape of its head and the smallish bill. The legs are stocky, the body thick, and the wing tips hardly extend much beyond the tail. Also, look at the white border separating the black underparts. The wings and the undertail coverts are lightly marked but not blotchy or broken, and the back pattern is finely flecked with gold, not coarsely patterned.

BILL: You know, it's funny, but I did notice that fine pattern on the back of this bird when I first set up, but I didn't say anything because the light was coming from a funny angle. I even thought about the possibility of European Golden-Plover, but I've never seen one. I didn't want to say anything until I got a better look at the bird.

TIM: Well, I think European Golden-Plover is a definite possibility here—but you know, now that I've had time to study it, there are some things that are beginning to trouble me. See, American Golden-Plovers always remind me of Britney Spears leaning against the hood of a '64 Mustang convertible and eating Girl Scout cookies, while this bird is closer to Rosie O'Donnell sitting on a bench in a train station and eating gummy bears. See what I mean? But what really bothers me is that speckling on the back. It looks more like light leaking through a 16-ounce can of tomato puree that's been blasted at close range with Number 9 shot than like a seat cover that's been perforated by a two-year-old kid wielding a model of a P-38 fighter plane, which is classic for both American and Pacific golden-plovers. But, the gold is duller—more like the crust from a day-old Italian roll illuminated by the vanity light in a Dodge pickup than a Rolex watch catching the last rays of sunlight through a window seat as your plane approaches O'Hare Airport.

SAUL *(pensive)*: Hmmm.

BILL: Well, I'm going to take notes and do a sketch. Are we all agreed that the bird has short legs and that the primaries don't project much beyond the tail?

TIM: Actually, I think the legs are more medium than short—more like the spare, sturdy, no-nonsense index finger of a Ginsu chef or the middle finger of a New York cab driver than, say, the slim, dexterous pinky of a concert cellist or the elongated, multijointed middle digit of an MG mechanic. You know, to be perfectly frank, the more I look at this bird the more I think of a meat loaf on a stick, which is exactly the impression I have of an American Golden-Plover in juvenile plumage just after it's arrived but before . . .

Hmmm. ■

ILLUSTRATION BY JEFF SIPPLE

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AUTUMN 2001

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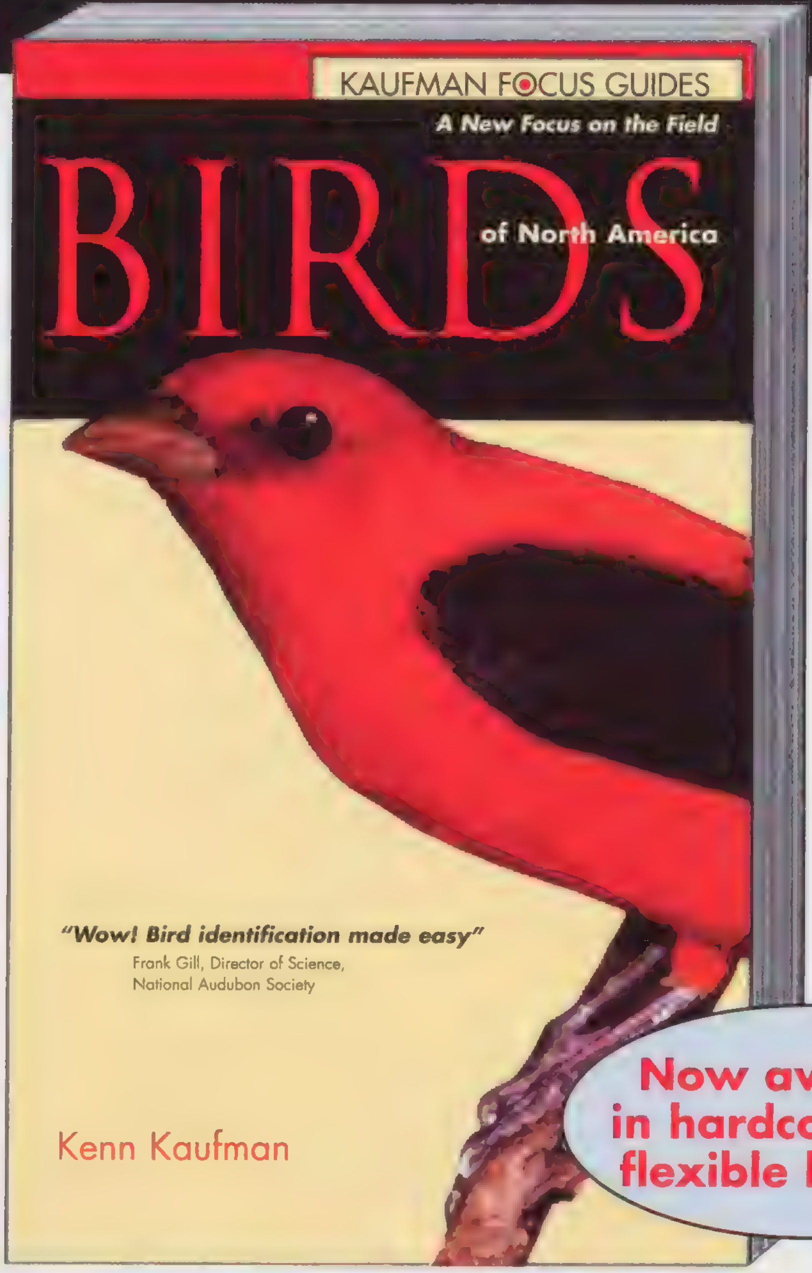
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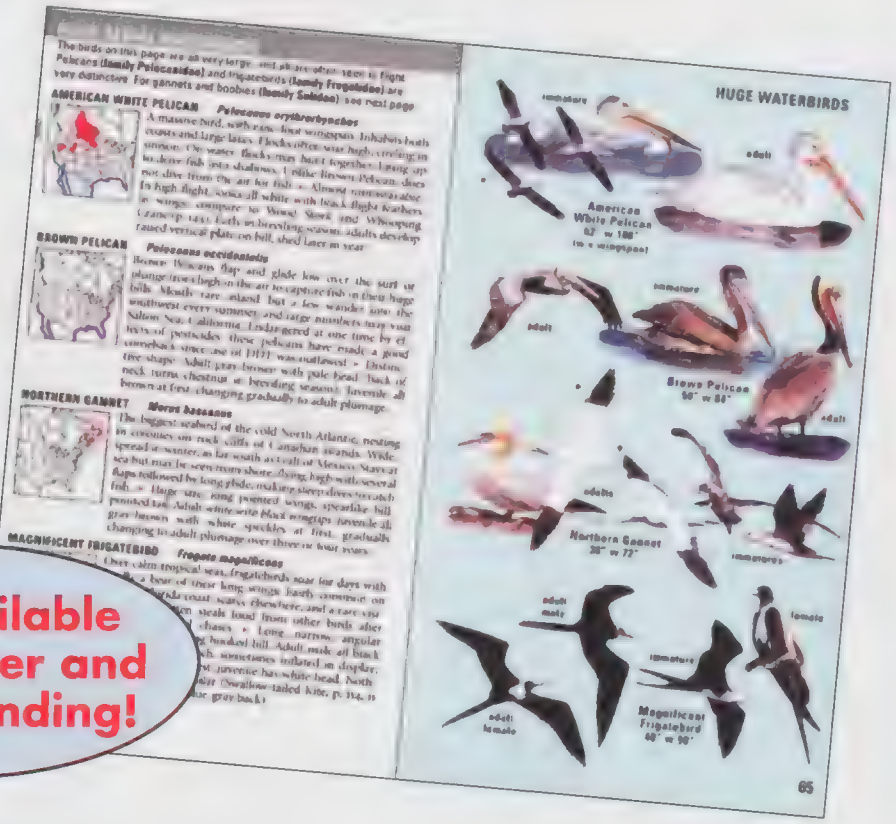

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LIVING BIRD

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GREETINGS FROM SAPSUCKER WOODS

I felt happy and upbeat a couple of days ago when I first sat down to write this column. It was a warm, sunny Tuesday morning in Ithaca, and I planned to write about the groundbreaking ceremony for our new building and all our bright hopes for the future.

And then a dark cloud struck. My wife called to say that a plane had just smashed into the World Trade Center in New York. Everyone poured out of their offices here and gathered around a radio to find out what was happening. Like a nightmare unfolding, we heard live reports about a second plane crashing in New York and then a third plane in Washington, D.C. As the enormity of the attack became apparent, some people wept openly in the hallways.

Words can't adequately express the horror of Tuesday's events, when more people perished than did in the Pearl Harbor attack, the sinking of the Titanic, and the Oklahoma City bombing combined. But I can't help thinking about the courage of those New York City firemen and policemen charging full-speed up the stairs at the World Trade Center, through blinding smoke and chaos, trying to rescue people, and those passengers on the plane that crashed near Pittsburgh, who made a desperate counterattack, denying the terrorists a final overwhelming strike and probably saving scores of lives. They're all heroes.

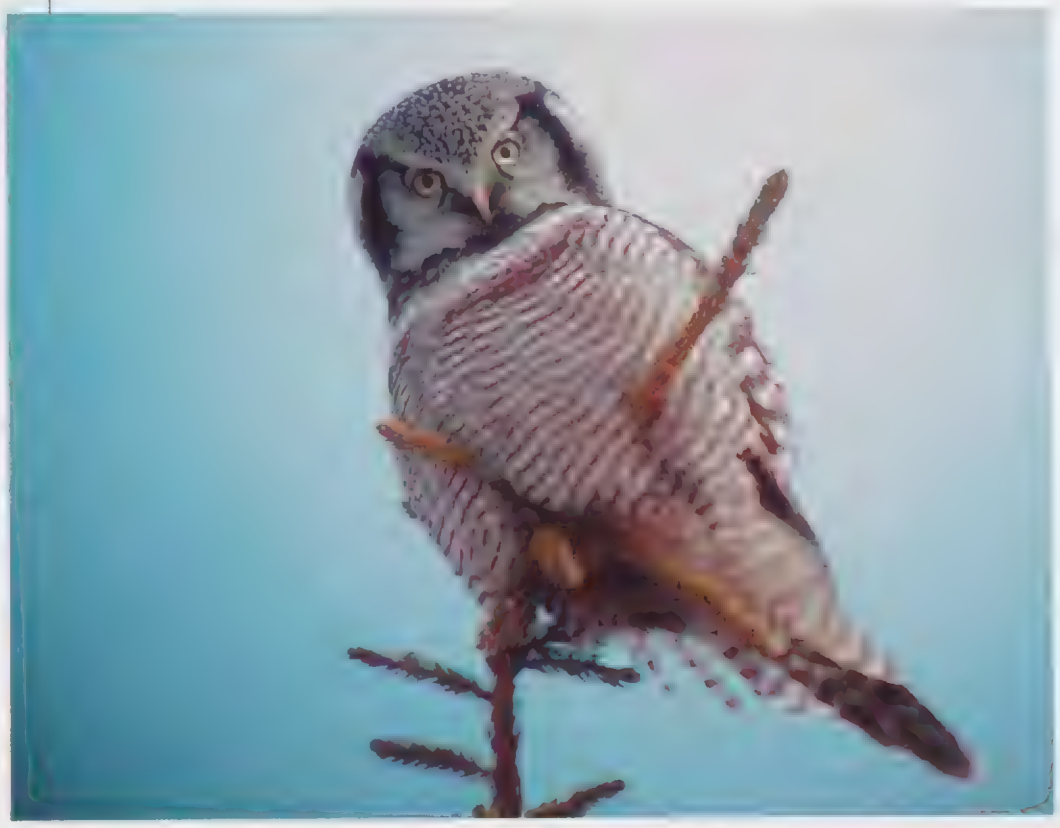
To any of the Lab's members and friends who lost loved ones in this horrendous national tragedy, please accept our heartfelt sympathy.

Tim Gallagher
Editor-in-Chief

Cover: Aplomado Falcons once ranged across the vast grasslands and deserts of southern Texas and Arizona, but by the early 20th century, they had been extirpated in the United States. Now, thanks to a major reintroduction effort by The Peregrine Fund, this falcon is once again a breeding species in South Texas. Photograph by Cliff Beittel.

Right: Would you believe that this Northern Hawk Owl portrait was taken with a point-and-shoot pocket digital camera held up to a spotting scope? Find out how it was done on page 40. Photograph by Kevin J. McGowan.

Back Cover: A male Northern Cardinal adds a dash of crimson to this autumn tableau. Photograph by Tom Vezo.



LIVING BIRD

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Letters

GARY KRAMER

LEKSICOGRAPHY

As an old upland birder, I really enjoyed Gary Kramer's article on grouse and prairie-chickens ("Life on the Lek," Summer 2001) in the last issue of *Living Bird.* But would someone please tell me, what is a lek? The author implies that anyone with any knowledge would know what he is talking about, but I'm here to tell you that I have no idea what a lek is. One dictionary says it is a river in the Netherlands, and two other dictionaries say it is monetary unit in Albania, worth about two cents to us.

On occasion I drive through prairie country and would like to find a lek and observe one. I'll willingly send in my two cents if someone would describe the "lek" that Kramer is talking about.

John Wright
Chesterfield, Missouri

It's a shame that not all dictionaries see fit to include the biological definition of "lek." Basically, a lek is a communal area where males of a given species congregate to strut and display, hoping to attract and court females. (This is not to be confused with a singles bar.)

The Editors

SURFING FOR SONGBIRDS

I have just reread "Surfing the Dawn" by Don Kroodsma in the Spring 2001 issue. Most birders I know love the dawn chorus. But this gentleman's use of words and description of the 24-hour-long trip around the globe had me crying from the sheer beauty of it all. Like when you see an unexpected rainbow or come over a hill to a beautiful view and all of a sudden it hits you. So like a child at a birthday party, I'll just say, more, more please of Don Kroodsma. *Living Bird* just gets better with every issue.

Cecilia M. Oakman
Rutland, Vermont

FOLLOW THE LEADER

I enjoyed Tui De Roy's article on Brown Pelicans (Summer 2001). I had just spent two weeks at the Outer Banks and saw dozens of lines of pelicans flying up and down the beach during that stay.

It was my father who noticed that, almost without exception, the line of pelicans would "follow the leader" when they started or stopped flapping their wings. If the first pelican started flapping, the second would start a moment later, then the third, fourth, and so on. And when the leader stopped flapping, the others would in turn one by one stop flapping. It was a bit eerie and definitely an "aha" experience for us to observe this behavior.

Debbie Saucke
Vestal, New York

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

An Earthshaking Experience

July 31, 2001, will long be remembered in the annals of the Cornell Laboratory of Ornithology. On that balmy Friday afternoon, Lab staff, board members, families, and friends came together at Sapsucker Woods to celebrate the official groundbreaking for the new Lab facility. The event featured all the essential ingredients for success: sparkling skies, an enthusiastic and appreciative audience, a milestone to celebrate, and plenty of ice cream.

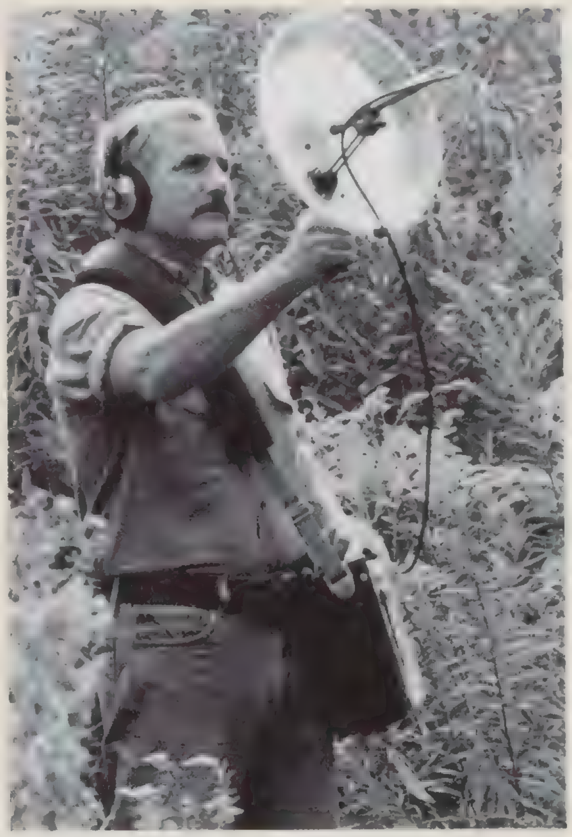
The "First Dig" was fun! A trumpet fanfare from the Lab rooftop by Jeff Wells kicked off the event followed by heartfelt remarks by Lab and Cornell leaders. The presentations recognized the Lab's past, celebrated the present, and provided a sneak preview of an exciting future. Lab administrative board chair Ned Morgens and his wife Linda led off the dig, followed by the rest of the crowd, each armed with a commemorative trowel. Energetic digging by Lab staff and friends quickly overflowed our ceremonial urn with topsoil, and rich, cold ice cream satisfied our appetites.

We are truly grateful for all of the help we received from Lab members. We could never have reached our building campaign goal of $32 million without your support. And we hope you'll come and visit the Lab in two years when the new building is finished. It will be a lasting monument to your dedication to helping birds.

—Scott Sutcliffe

JIM MAZZA

Ned Morgens, chairman of the Lab's administrative board, welcomes members and friends to the groundbreaking ceremony.



The Lab Loses a Friend

James L. Gulledge, a long-time friend of the Lab and a former director of its Library of Natural Sounds (LNS), passed away on June 5, 2001, after a lengthy illness. He will be greatly missed. Jim joined the Lab staff in 1974, straight out of graduate school at the City University of New York. As head of LNS, he had a broad vision and aimed to transform the collection rapidly into a modern sound archive—a systematically based research resource that would set the standard for wildlife sound collections.

Under his leadership, LNS entered a period of dramatic growth. He established contact with wildlife sound recordists working in remote corners of the world and helped support their efforts. These amazingly prolific recordists included William W. H. Gunn, Peter Kaestner, Ben King, Ted Parker, Arnoud B. van den Berg, Paul Schwartz, and others. In 1974, Jim and his assistant, Andrea Priori, traveled to Venezuela and, in only two weeks, copied more than 5,000 of Paul Schwartz's sound recordings. Thus Schwartz's life's work was protected from the ravages of a tropical climate and today this is the best-preserved version of this enormous body of Neotropical sound recordings.

In 1978, Jim wrote the first in a series of successful proposals to the National Science Foundation that provided personnel and modern studio equipment, dramatically enhancing the ability of LNS to handle a growing influx of recordings. In 1979, he met a young field biologist who'd begun recording in the tropics. Jim recognized his potential and offered him the full support of LNS. That young man was Ted Parker. Like so many of the decisions Jim made during the 14 years he charted the Library's course, it was the right one. Today's Library—now called the Macaulay Library of Natural Sounds—is the largest archive of its kind in the world, due in large part to the groundwork laid by Jim Gulledge. Although many people may admire his professional accomplishments, those who can best appreciate the full measure of this man are the ones who were fortunate enough to call him a friend.

—Greg Budney

Spotlight

CROSSBILLS IN THE CARIBBEAN?

by David S. Wilcove

The 1916 discovery of crossbills in the Dominican Republic stunned ornithologists. Now, less than a century later, Hispaniolan Crossbills face a precarious future.

A friend of mine who has participated in the discovery of a half-dozen new species of birds once confessed that he and his coworkers rarely realized the significance of their discoveries at the time. More often than not, they failed to recognize the bird in question as something novel until they had returned to the museum and compared it with specimens of other species. But I suspect that W. L. Abbott had no doubts about the significance of his find when, in October 1916, he collected a pair of crossbills in the mountains of the Dominican Republic, on the West Indian island of Hispaniola. Crossbills in the Caribbean? The presence of these quintessential boreal birds in the sunny Caribbean stunned ornithologists around the world. To Frank M. Chapman, Abbott's discovery represented "one of the ornithological sensations of recent years." The specimens were duly written up as a new species: *Loxia megaplaga*, the Hispaniolan Crossbill.

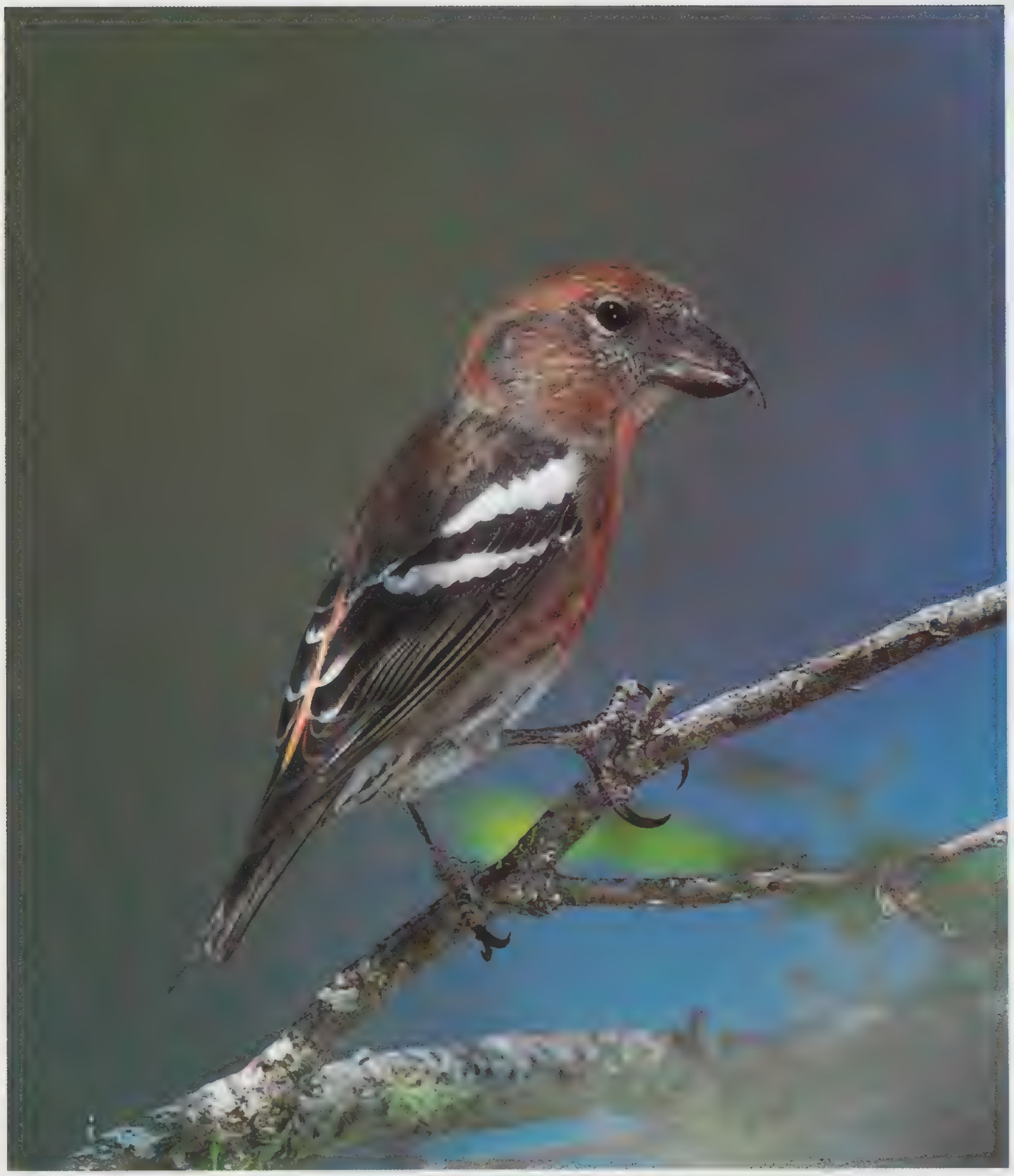
By the 1930s, ornithological fashion had shifted from "splitting" to "lumping," and the Hispaniolan Crossbill was demoted to the rank of subspecies or race of the White-winged Crossbill. Species or subspecies, it remains one of the great enigmas of Caribbean ornithology. Thus, when a group from Environmental Defense, The Nature Conservancy, the Association for Biodiversity Information, and the World Wildlife Fund decided to visit the Dominican Republic earlier this year, I placed the Hispaniolan Crossbill at the top of my list of birds to find. But I was not particularly hopeful. By all accounts it is an uncommon bird, and in recent years, ornithologists have had considerable trouble finding it. Craig Benkman, the world's expert on crossbills, walked over 90 miles of trails and dirt roads in suitable habitat in 1988 and 1991 and found a total of eight Hispaniolan Crossbills. Others have spent days, even weeks, in the same areas without seeing them. But the leader of our group, Eladio Fernandez, was undaunted. An accomplished Dominican conservationist, bird watcher, and businessman, Eladio claimed to know of a place in the Sierra de Bahoruco where the crossbills regularly occurred. Give me a week, he promised, and I'll show you almost all of Hispaniola's endemic birds, including the crossbill.

The Sierra de Bahoruco cuts across southeastern Hispaniola, straddling the border between the Dominican Republic and Haiti. Like all good mountain ranges, it adds a little chaos to the landscape, trapping moisture here, throwing a rain shadow there, and providing a high-altitude refuge for plants and animals that cannot abide the hot, humid lowlands. At dawn on the morning of January 14, we left the seaside town of Barahona and headed into the Sierra. As we ascended the mountain, the scrubby hillsides gave way to moist, broad-leaved forests. Then, approaching the summit, the habitat changed to pine savanna—a virtual monoculture of Hispaniolan pines growing amid a thick layer of grasses and small shrubs. Here we began our search for the crossbills. The first song that greeted us was a familiar one—Pine Warblers. The forest was full of them, along with wintering Common Yellowthroats and Black-and-white Warblers. Indeed, were it not for the Golden Swallows flying overhead and the Plain Pigeons eyeing us nervously from atop the tallest snags, one could easily imagine we were in the coastal plain of Georgia or South Carolina rather than on a mountain in the Caribbean.

It wasn't long before we heard the chattering of distant crossbills, and off we went in hot pursuit. Yet the farther we hiked, the farther away the birds retreated, until the sound simply vanished, leaving only the trilling of the Pine Warblers to animate the forest. Unwilling to admit defeat, we pressed on. A couple hours later, a lone crossbill began calling several hundred yards ahead of us. We hurried toward the sound and quickly identified the very tree from which the bird was calling.

For more than 10 minutes, we scanned every branch and cone of the pine, but we could not find the crossbill. Eventually the call notes stopped, and we reluctantly concluded the bird had somehow given us the slip—everyone, that is, except Larry Master, who patiently studied the now-silent tree long after the rest of us had moved on, and then announced, "I've got it." A few minutes later, all of us had assembled around Larry and were happily admiring a male Hispaniolan Crossbill as it fed on pine cones. Its broad white wing-bars reminded me of White-winged Crossbills I had seen in the United States and Canada, but its bill was much

ELADIO FERNANDEZ



Hispaniolan Crossbills have broad, white wing bars just like other White-winged Crossbills, but their bills are much more massive.

more massive than those of its northern cousins.

As Benkman and others have shown, the bills of the various species and populations of crossbills represent finely tuned instruments for extracting seeds from the cones of particular conifers. In Canada and the United States, White-winged Crossbills specialize on the small cones of spruce trees; their bills are smaller and more delicate than the bills of Red Crossbills, which specialize on the cones of pine trees. But in Hispaniola, there are no spruces, only pines, and the crossbills consequently have heavy bills. Indeed, were a White-winged Crossbill from Canada to wander to Hispaniola, it might well starve, given the difficulties it would have extracting pine seeds with its delicate bill. And if it somehow managed to survive and breed with an Hispaniolan Crossbill, the offspring would probably inherit an intermediate-sized bill that would also be an inferior instrument for extracting pine seeds.

Such speculation raises two intriguing questions: First, if crossbills from Hispaniola and Canada cannot survive in each other's habitats, might it make more sense to consider them two separate species, as ornithologists did in 1916? Second, could Hispaniolan Crossbills have evolved from Red Crossbills rather than white-wings? Populations of Red Crossbills do in fact exist in the pine forests of Mexico, Guatemala, and Nicaragua. Perhaps they, rather than white-wings from the northern spruce forests, are the true ancestors of the Hispaniolan birds.

Whatever their past, Hispaniolan Crossbills face an uncertain future. Some biologists believe that in much of the Sierra, the pines produce a bumper crop of cones approximately once every three years, followed by two meager years. The crossbills have adapted to these boom-and-bust cycles by adopting a nomadic lifestyle, wandering around the mountains in search of the productive stands. Thus, the birds require extensive amounts of forest to ensure that they always can find a productive patch. And because the average age of a pine tree used by Hispaniolan Crossbills for foraging and nesting is nearly 100 years, the forests must be mature or old-growth.

Deforestation has taken a heavy toll on Hispaniola's pine forests, making it increasingly difficult for the crossbills to find suitable stands of pine. Moreover, the birds face a second, more insidious threat. The pine savannas of Hispaniola are sustained by recurrent, low-intensity fires that keep other trees at bay and permit the pine seedlings to establish themselves. The normal fire cycle has been altered by a combination of overzealous logging, slash-and-burn agriculture, and frequent burning of adjacent cattle pastures to regenerate forage. Nowadays, the fires tend to be too hot and too frequent, and they are destroying the pine forests. No matter how much land the governments of Haiti and the Dominican Republic set aside in the Sierra de Bahoruco, the Hispaniolan crossbill will not survive unless those forests are subjected to the appropriate fire cycle.

Call it the Goldilocks Syndrome: The fires can't be too strong or too mild; they can't be too frequent or too scarce. They have to be just right. And if they are, a magnificent ecosystem will endure, along with a bird that seems wildly out of place in the only place it truly belongs. ■

Suggested Reading

Craig W. Benkman. 1994. "Comments on the Ecology and Status of the Hispaniolan Crossbill (*Loxia leucoptera megaplaga*), with Recommendations for its Conservation," *Caribbean Journal of Science* 30:250–254.

Steven C. Latta, Marriah L. Sondreal, and Christopher R. Brown. 2000. "A Hierarchical Analysis of Nesting and Foraging Habitat for the Conservation of the Hispaniolan White-winged Crossbill (*Loxia leucoptera megaplaga*)," *Biological Conservation* 96:139–150.

CARIBBEAN PRIDE

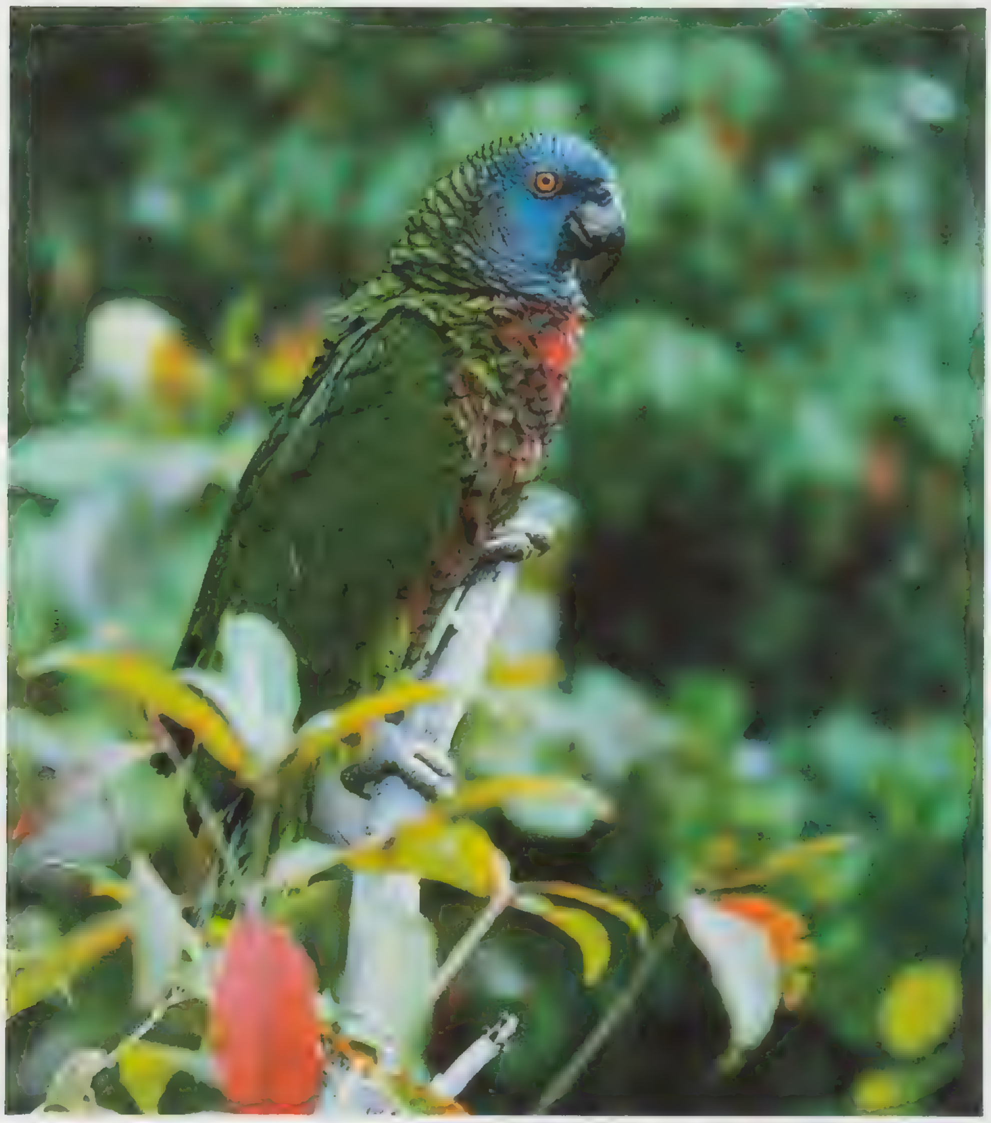
BY ALLISON CHILDS WELLS

Conservation comes easy when people learn to value the natural treasures of their homelands

Plenty of daylight is left, but the world we're moving through doesn't see much of it. Tall trees lean over us in a sprawling patchwork of oversize leaves. Bromeliads hang like webs. But here and there an opening in the canopy strikes a brilliant swathe across the understory of greenery, turning all it touches to gold.

We are in the depths of the Edmund Rainforest Preserve on the island of St. Lucia. My husband Jeff and I are the birding guides for a most unusual tour that combines world-class sailing and bird watching in the picturesque islands of the Caribbean. Fifty-two participants (aboard 11 sailboats) are taking part in this voyage, arranged by the National Audubon Society and The Moorings, a yachting adventure company.

Our local trail guides lead us along steep ravines, over moss-covered rocks and gurgling brooks. They are focused on getting us to the lookout points where we hope to see the spectacular St. Lucia Parrot (*Amazona versicolor*),



S. LOUSADA/VIREO

Deep in a rainforest on an island paradise perches one of the world's rarest birds: a St. Lucia Parrot (left).

DAVID WELLING

one of the rarest birds on earth. The island's other endemic bird species include the St. Lucia Oriole, St. Lucia Black Finch, St. Lucia House Wren (a subspecies), and Semper's Warbler (which ornithologists fear may be extinct), all restricted to an island approximately one-sixth the size of Rhode Island. As remarkable as each of these species is, though, none of them has lured more ecotourists to the island than the parrot. So the guides seem surprised when we stop to follow the haunting tones of a Rufous-throated Solitaire, or contrast the tiny Antillean Crested Hummingbird with the much larger Purple-throated Carib at rest on the same branch, or *spish* in a half-dozen curious little Adelaide's Warblers. We stop to watch Lesser Antillean Swifts twittering in a patch of sky, and there's a Brown Trembler and some Lesser Antillean Flycatchers. Our sailors want to see them all, perhaps in part because they're afraid they won't see a St. Lucia Parrot.

In the late 1970s, ornithologists estimated the entire population of St. Lucia Parrots at fewer than 150 individuals—a number so low that their extinction seemed imminent. For many years, these parrots (like their cousins on other islands in the West Indies) were hunted indiscriminately for food. They've also long been persecuted by the cage-bird industry. Those who take their young often cut down the birds' precious nest trees. And pet traders often also attempt to shoot the adults in the wing to capture them, sometimes killing them in the process. Local people have logged the birds' forest habitat extensively to get fuel and increase the amount of open land available for farming.

Were it not for the boundless energy and efforts of a determined Englishman named Paul Butler, the St. Lucia Parrot may well have already gone the way of the extinct Passenger Pigeon and Carolina Parakeet. The efforts of Butler and the RARE Center for Tropical Conservation, combined with the St. Lucia Forestry Department's determination to save an important part of the island's unique natural history, made for one of the most ambitious and successful conservation campaigns in history.

After 45 minutes or so, our guides halt us near an elegant waterfall tumbling into a vast valley. We fan out across the trail and wait. Before long, we hear ringing *kee-awk* squawks: parrots!

Helping our group to see green birds against a green backdrop is not easy. I teach them the clock method—"imagine a clock face, and the snag sticking up directly on the other side of the valley is 12 o'clock"—and they catch on quickly. As the parrots sweep before us, we see their brilliant blue faces, scarlet throats blending into the blue-green wash on their breasts, red-and-blue wing patches, and that green so green it almost hurts.

But something even more amazing happens as we start hiking back. Several more parrots fly in and land in a tree almost directly overhead. We watch them as though they're sharing one of the most extraordinary secrets on earth with us—and they are. Our sailors gasp; someone keeps repeating, "I can't believe it, I can't believe it."

By the time we're out of the forest, it's pitch black, but not one of us cares.

The famed peaks Petit Piton and Gros Piton are St. Lucia's most famous landmarks, towering high above the sea. The area is perfect for sailing—and for birding. Above, a Carib Grackle comes aboard, giving Jeff Wells a close-up view.

LEFT: CHRIS HUXLEY. RIGHT: ALLISON CHILDS WELLS.

The St. Lucia Parrot and other wildlife on this island have been protected—at least on paper—since 1885, when the Wild Bird Protection Ordinance was passed, making it illegal to kill or keep parrots. But it was not enforced, and the parrot population continued to dwindle. Wrote Lady Thompson in *Avicultural Magazine* in 1902, "Unfortunately dead birds may be found almost every week in the market of the little town of Soufriere, and they are eaten as a delicacy by both black and white Creoles." In the *West Indies Bulletin* in 1911, A. H. Clark wrote "They learn to talk, and are therefore always the most prized of avian pets. This leads to a wholesale traffic in

WOLFGANG KAEHLER

young birds, the nesting sites being so closely watched that scarcely any free young are permitted to remain.” And renowned ornithologist James Bond stated in a 1947 issue of *Audubon* magazine, “Although these are supposedly protected, I have noticed that many natives will shoot any large edible bird they see.” Despite a later tightening of the ordinance, parrots were kept openly in cages into the 1970s.

Paul Butler came to St. Lucia in 1977. A graduate student from North East London Polytechnic, he worked as a conservation advisor with the St. Lucia Forestry Department. He and his research team conducted an intensive five-week parrot population census. The results suggested that the number of parrots could be as low as 100. Based on Butler’s findings and recommendations, the government enacted the Wildlife Protection Act in 1980 and adopted other policy changes to protect the birds. In 1981, the Forestry Department developed an environmental education program, which published a monthly newsletter for the general public that was inserted into the island’s newspaper and an environmental magazine for children. The attitude among the island people improved markedly. But what finally set the St. Lucia Parrot on a dramatic road to recovery was Butler’s development of “social marketing.”

“I started doing conservation as a traditional forest officer, going out and talking about the watershed and filtration, but I found that this didn’t excite people. They were nodding off to sleep,” says Butler. “We had to ask ourselves, what can we do to get people really excited about conservation?”

Social marketing is much like traditional Madison Avenue-style advertising campaigns that influence attitudes and change behaviors by touching people on an emotional level. Such campaigns are often built around a charismatic figure. On St. Lucia, the choice for a campaign mascot was obvious: the stunningly beautiful St. Lucia Parrot.

Backed by RARE, which had appointed Butler as director of conservation education in 1988, the image of the parrot—locally known as “Jacquot”—began appearing on billboards and posters, as well as in comic books, puppet shows, and music videos. Local churches of all denominations featured the character in sermons. An actor dressed as Jacquot (in a St. Lucia Parrot costume) flapped around schoolrooms filled with attentive children, and popular local musicians composed songs sharing the story of the parrot and the importance of protecting it and its rainforest habitat. A bus called the Jacquot Express broadcast the calls of the parrot throughout the cities. Appropriately enough, the campaign was called “Promoting Protection through Pride,” and it was just what the St. Lucia Parrot needed.

We rise early after spending the night moored in Anse des Pitons. On either side of us tower the famed and mighty Pitons—Petit Piton to the North, Gros Piton to the South—rising like monstrous fins out of the sea. They shrink behind us into the deep blue Caribbean as we set sail south to the Island of St. Vincent.

We had been warned that this crossing is always rough. Sure enough, we’re broadsided by one gigantic swell after another once we pass the tip of St. Lucia. *Rainbow Lady*, our 49-foot sloop, was custom-built to withstand far worse conditions, but this is plenty bad enough for Jeff, who has “hugged the rail” on many an ocean birding voyage.

Between blasts of seawater that douse us despite the canopy over the deck, we identify a plethora of seabirds: Audubon’s Shearwater, White-tailed Tropicbird, Brown and Red-footed boobies, Magnificent Frigatebird. The sea calms as we reach St. Vincent. We cruise near the

DON'T HIDE YOUR NATIONAL PRIDE
To protect your National Bird is to prove your love for your Country
SAINT VINCENT & THE GRENADINES

Englishman Paul Butler and the RARE Center for Tropical Conservation set about “marketing” the value of the indigenous birdlife and the need for its protection to the local people. They made billboards and posters such as this one of a St. Vincent Parrot (facing page).

RARE (2)

“Jacquot,” a comic character based on the St. Lucia Parrot, became the campaign mascot on St. Lucia. He appeared in comic books and puppet shows throughout the island, and a specially painted bus called the Jacquot Express (at right) broadcast the calls of the parrot through the city streets.

BHL

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CHRIS HUXLEY

DOUG WECHSLER/VIREO

The Vermont Nature Trail on St. Vincent is a wonderland for birding. Hummingbirds—such as this Antillean Crested Hummingbird (above)—are everywhere, and Scaly-breasted Thrashers (right) and Lesser Antillean Bullfinches (facing page) also occur.

shore where lush green hills bear the occasional agricultural plot and a shanty here and there. St. Vincent is even smaller than St. Lucia, but it too has endemic birds, such as the Whistling Warbler, a peculiar-looking bird with a big white eye ring and bold dark breast band. The island also has its own race of House Wren. Most famous, though, is the island's answer to Jacquot, the magnificent St. Vincent Parrot (*Amazonia guildingii*).

Ornithologists in the 1920s wrongly thought that the species had become extinct in the wild, a victim of the same pressures that put the St. Lucia Parrot in peril: hunting, habitat loss, and the cage-bird trade. Fortunately, Paul Butler and RARE are a presence on St. Vincent as well. In fact, it is here that Butler first put his social marketing ideas into action, having been originally hired by RARE specifically to work on St. Vincent.

It's no wonder that Butler's work was later implemented on St. Lucia, because his success on St. Vincent was so encouraging. Local corporate support helped cover the costs of the brilliant social marketing campaign here. These efforts included producing a parrot video—clips of which were shown regularly on television—and a recording of "Vincie's Song," written for the island's new mascot and played frequently on local radio stations. Another song, "Leave de National Bird in de Wild," won the 1988 Calypso King award. Businesses created soaps, candles, bottle openers, and other products shaped like the parrot. Schoolchildren sang and danced to celebrate their heritage. As a result of the public education blitz, St. Vincent Parrot numbers have doubled from a dangerous 400 or so to a still precarious but much healthier 800 individuals.

The Vermont Nature Trail on St. Vincent is magical. Hummingbirds are everywhere. Scaly-naped Pigeons oblige us with sightings, as do Lesser Antillean Tanagers and Lesser Antillean Bullfinches. Some of us glimpse a Cocoa Thrush, which in the Caribbean is found only on St. Vincent and Grenada.

As our guide leads us along the trail, we read signs provided by RARE, the World Wildlife Fund, and other conservation groups telling us about the plants and wildlife of the forest. The trail winds up and down and all around, slick with mud in places. But the St. Vincent Forestry Department has done all it can to keep the trails accessible and ensure that as many park visitors as possible can see the parrots.

At the parrot overlook, we spot a couple of Broad-winged Hawks and a Common Black Hawk soaring over the valley. Then, we are startled by a series of loud, rising notes: a Whistling Warbler. It sings again nearby and is joined by another. Jeff *spishes* and imitates the tiny bird's song, but it stays hidden. The parrots, however, do not. We see them first in the distance, then others flap by close, the sun illuminating their golden-brown upperparts, the orange patch on their wings, the brilliant yellow on their tails, the subtle cream-colored foreheads melding to bright yellow and azure blue.

As I stand there working to make sure that everyone in our group gets a satisfying look at the birds, one woman hugs me. Her friends back home told her she was setting herself up for disappointment by trying to see the St. Lucia and St. Vincent parrots. Now she has seen both, and her eyes well with tears as she vows that she will carry these moments with her for the rest of her life.

We arrive back at the Pitons with just enough time remaining for a short bird walk. It's obvious that our group is too scattered and exhausted for an unplanned trek, so Jeff and I take the opportunity to invite Stevan, our skipper, and Magdelin, our chef and first mate, to join us. Both are quiet St. Lucia natives, and both seem to have developed an interest in birds during the course of the trip, adeptly pointing out seabirds during our crossings.

Although Stevan can't bring himself to leave the *Rainbow Lady*, Magdelin accepts our invitation. As we haul ourselves up the impossibly steep road along Gros Piton, we share our binoculars with her so she can savor her native birds. Together we find the last new bird for our trip list, a Lesser Antillean Saltator. Magdelin is especially thrilled to see the colorful St. Lucia Oriole she has heard about. We in turn are fascinated by the details she shares with us about her life on the island.

That night, at our final dinner party, after a short presentation emphasizing again the importance of conservation to these islands, we open the platform to everyone. Someone in

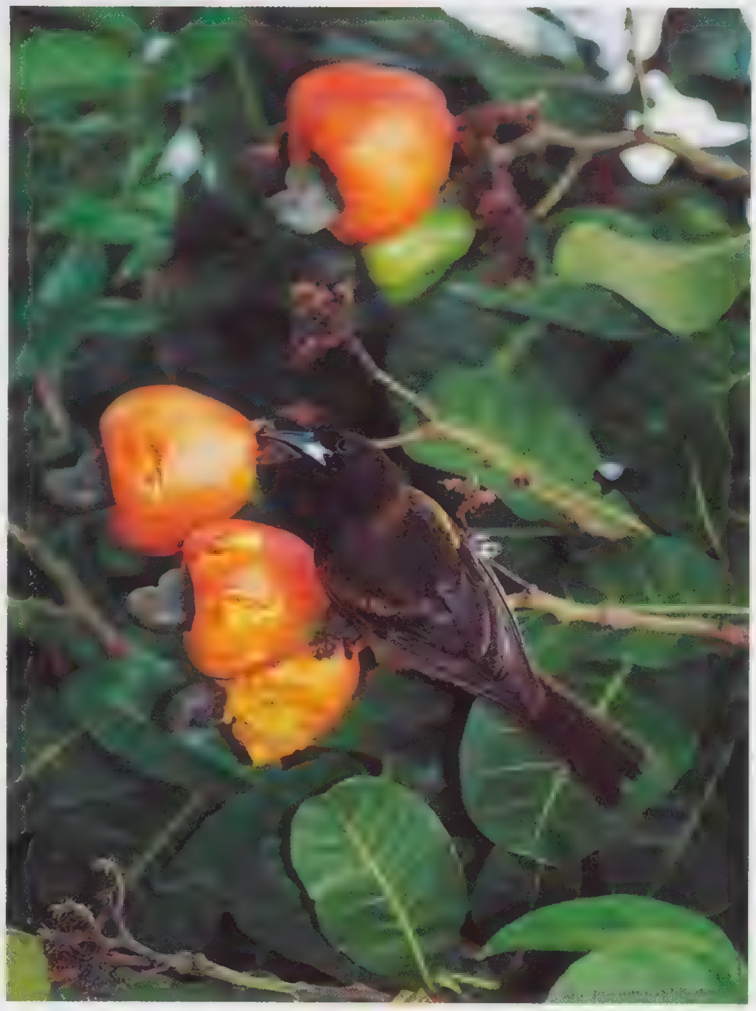
DOUG WECHSLER/VIREO

CHRIS HUXLEY (2)

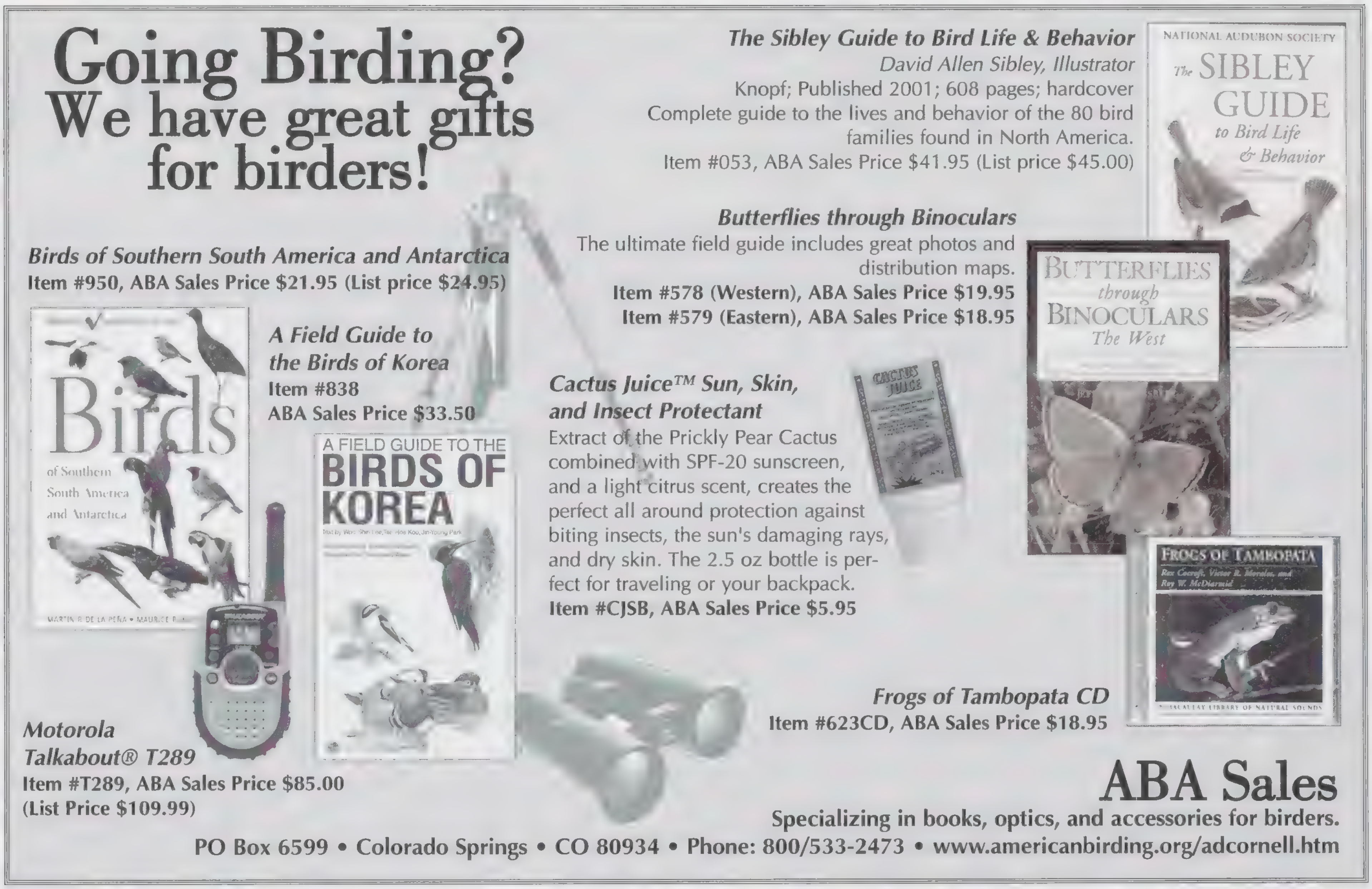
A view of paradise: Petit Piton at the end of the rainbow (above). At right, a female St. Lucia Oriole feasts on cashew apples.

the group admits, "I came on this trip mostly to sail, but after seeing all these rare birds and learning about their plight, I want to know what I can do to help in my everyday life." Jeff and I are eager to oblige—this is exactly the kind of response we'd hoped for.

The next morning on the shores of Marigot Bay we say a long good-bye to our bird-watching sailor friends, hoping that we will all meet again. It's harder still saying good-bye to Magdelin and Stevan, after spending eight splendid days on the *Rainbow Lady* with them. We are deeply touched when Magdelin gives us a bird feeder in the shape of a hummingbird, carved out of a coconut shell by a local craftsperson. We leave them our field guides, a little tattered but filled with notes that we hope will help them to be even more effective ambassadors for the island's birds. Beaming, Magdalin assures us, "We will watch them for you while you are gone." ■



Allison Childs Wells is the Lab of Ornithology's director of Communications and Outreach.



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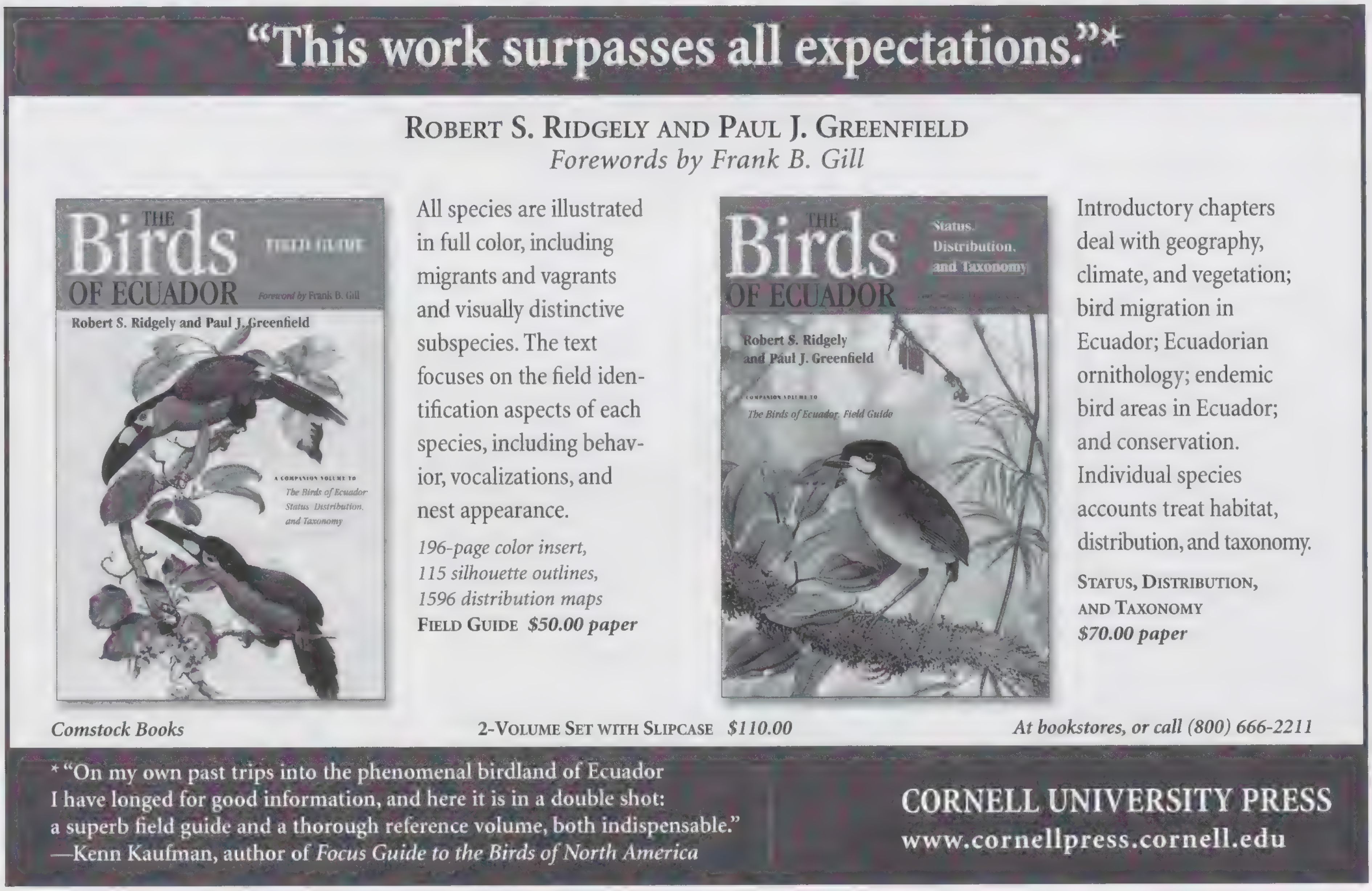

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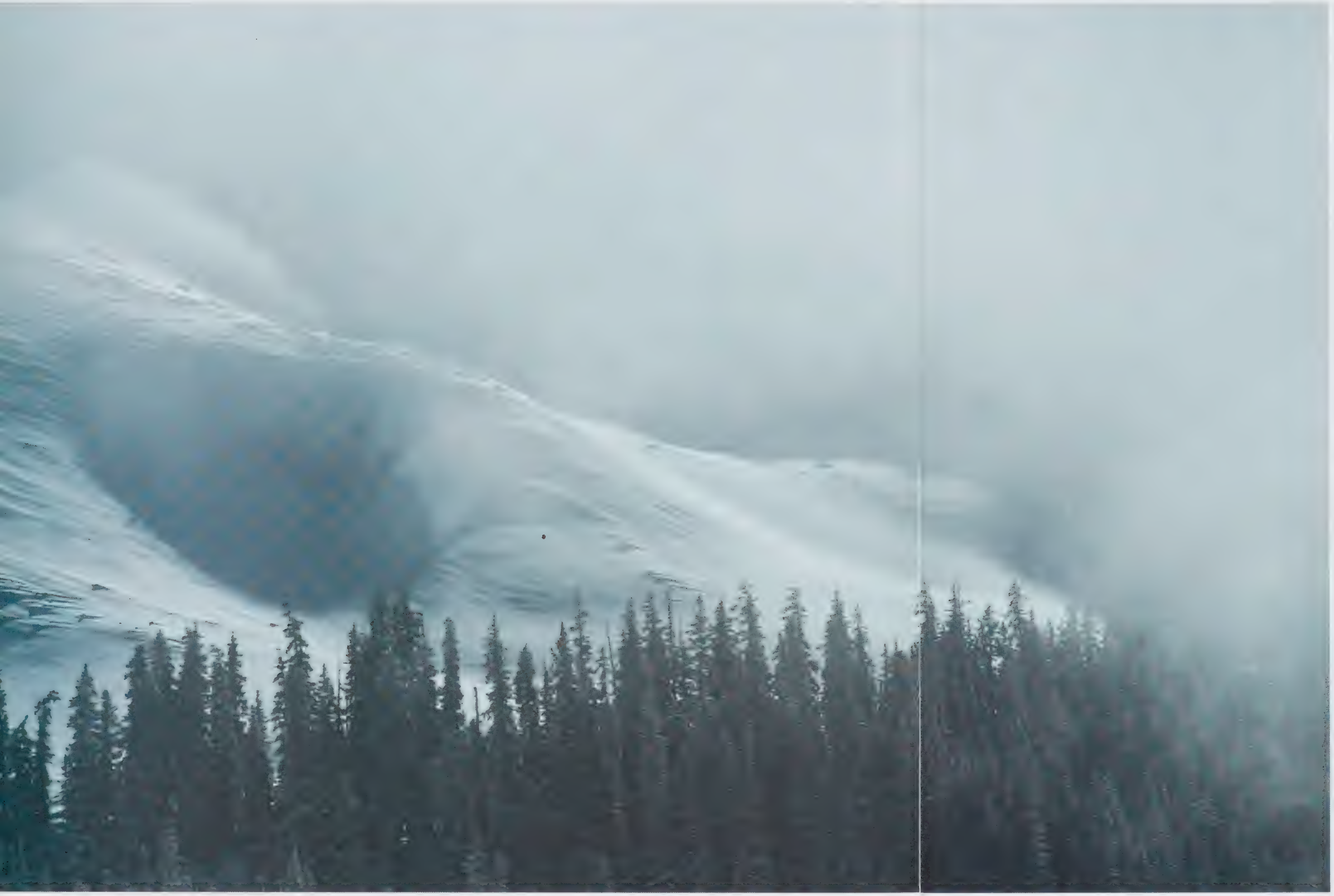
A POISONED PARADISE



Few places in the Lower 48 states seem as remote and pristine as the snow-swept upper slopes of the Colorado Rockies. And yet White-tailed Ptarmigan (at right) and probably other wildlife there are being poisoned by cadmium—a deadly byproduct from decades of mining for gold, silver, copper, and zinc.

Text and Photographs by James R. Larison

The high country of the Colorado Rockies may look pristine, but ptarmigan and other wildlife there now carry toxic levels of cadmium

If I were to be completely honest with myself, I would have to admit that I fear many things. I'm afraid of man-eating sharks, poorly piloted airplanes, caves, cities, growing old, not growing old, and of course, embarrassing myself. But I've never been afraid of climbing mountains. In fact, the only time I feel truly invigorated is when I'm anchored to the flank of a nearly vertical mountainside. One bumper sticker reads, "Attitude Is Everything" but in my experience, much can be said for *altitude.*

Already this morning I have gained a lot of altitude. I started climbing in the dark at about 11,000 feet and now, even though it is not yet dawn, I'm nearing the 13,000-foot level. To my left, the San Juan Mountains form a stark silhouette rising into the calm, clear Colorado sky. To my right, a sheet of ice extends from where I stand in all directions to the limits of my vision. As I climb, the predawn silence is broken only by the rhythmic sounds of my crampons as each in its turn bites into the frozen crust. For added security, I slam the point of my ice axe into the snow, take two steps, and then repeat the process.

It is bitterly cold at this elevation. No matter how much clothing I wear (and how much I have paid for that clothing), I can still feel my body heat being sucked up toward that great

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A White-tailed Ptarmigan (above) crouches in the snow beneath a willow. The birds depend on these plants for food, eating their buds and leaves. Unfortunately, willows in the "ore belt" of Colorado have been absorbing massive amounts of cadmium, which has leached from the soil and from abandoned mines (facing page), contaminating the surface water. Cadmium accumulates in the ptarmigan and eventually reaches a toxic level.

celestial sink. Of course, I don't really expect to be comfortable on the side of a mountain in May. In addition to the cold, my calves and lungs burn, my head aches from dehydration, and I am periodically swept by an overwhelming sense of nausea brought on by oxygen deprivation. If I have learned anything in my years of working as an alpine ecologist, it is that it helps to have a fairly high pain threshold.

So, why does an aging university professor beat himself up like this? I doubt that I will ever fully understand my motivation. Perhaps because the act of climbing is so slow and repetitive, I frequently find time to ask such questions. If, at my age, I'm a bit slow with the answers—well, no one is here to notice. Perhaps as a guarantee that I will eventually come up with the right answer, however, I remind myself that climbing mountains beats sitting at my desk back at the university. I'll take a blast of cold wind in the face over the stale, recycled air in my office any day.

The simple answer is that I have come—as I do every spring at this time—to search for White-tailed Ptarmigan. These hardy alpine dwellers actually live year-round and breed on these harsh windswept slopes, somehow managing to subsist on little more than a few insects and a paltry supply of leaves and buds. Somewhere on this mountain, I assure myself, the ptarmigan have already begun their breeding season. The trick will be to get to them before the rising sun and the normal progression of spring turns the snow surface to mush. When that happens, it will be all but impossible for me to get around at this elevation.

I was originally attracted to the White-tailed Ptarmigan by reading an unpublished report by Clait Braun of the Colorado Division of Wildlife. Clait was working in the upper Animas River watershed near Silverton, Colorado, when he captured ptarmigan that had brittle bones. He wasn't able at the time to identify what had caused the poor condition of the birds' bones. And the terrain was so rugged, he couldn't determine whether this condition was widespread.

This is my fifth year of studying ptarmigan in this watershed, and I am just beginning to understand the perilous lives these birds lead. Ptarmigan in this region are seriously at risk—not from the cold, not from the altitude, but from an environmental poison. The culprit is cadmium, a bluish-white powder used in batteries and many industrial processes. It was mined for generations—along with zinc and other metals—in central and southwestern Colorado. And for perhaps a century, miners spilled these metals onto the ground, contaminating the environment. In most places, cadmium is only a trace constituent in the natural environment. It is so rare it often goes undetected even when scientists use today's most sophisticated instruments.

In a 10,000-square-kilometer section of central and southwestern Colorado, however, cadmium is much more common. It is found not only in the soil but also in some plants. My research has shown that all of the willow species contain extremely high concentrations of this toxin—enough to make these plants dangerous to anything that eats them. White-tailed Ptarmigan eat lots of willow, as do moose, elk, snowshoe hares, and beaver. All of these herbivores may be at risk of cadmium poisoning, as are any predators that might in turn consume them.

Cadmium was first recognized as an environmental poison in the 1960s when researchers examined a number of women in Japan's Jinzu River valley who had severe bone abnormalities, including excessive spinal curvature. They also frequently fractured their bones. The slightest pressure on these patients' bones could cause intense pain. Many of these women later died of complications related to this condition. Researchers eventually found that they were suffering from chronic cadmium poisoning. It turned out that the affected women lived in a village downstream from a zinc and cadmium mine. The mine wastes washed into the Jinzu River, farmers used the river's water to irrigate their rice crops, and the cadmium became concentrated in the rice. The villagers ate large quantities of rice and thus were exposed to toxic amounts of cadmium. When enough cadmium is consumed, a victim's kidneys begin to fail, producing a blood electrolyte imbalance that strips the body of calcium and is potentially fatal.

As I examined the habitat of the brittle-boned ptarmigan, it occurred to me that the conditions in Colorado were quite similar to those in the Jinzu River valley. Thousands of mines once existed in a region of Colorado known as the "ore belt." Many of these produced zinc, which almost always occurs with cadmium. A large number of these mines, which are now mostly abandoned, continue to bleed toxic metals—including cadmium—into the surrounding surface water. The big difference between Colorado and Japan, however, is that, in the former, willow rather than rice is ab-

Author James Larison (above) releases a newly banded male ptarmigan. He has been studying these birds in Colorado's Animas River watershed for five years.

sorbing and concentrating cadmium and so wildlife rather than people are most at risk.

The breakthrough in this research came in early 1998 when I discovered that nearly half of the adult ptarmigan in Colorado had toxic levels of cadmium in their kidneys. Indeed, more than half of the adult birds have cadmium-induced nephrosis, a degenerative condition characterized by kidney lesions. Because the kidneys are responsible for maintaining the electrolyte balance in vertebrates, a cadmium-poisoned bird with a damaged kidney cannot metabolize calcium properly. Such birds tend to have brittle bones and lay fewer eggs. Not surprisingly, White-tailed Ptarmigan in the Animas River watershed have 20 percent fewer eggs in their clutches than the average for the species. Additionally, I found that ptarmigan with high kidney-cadmium levels had 10 percent less calcium in their leg bones. Over the years, I have captured a number of birds in Colorado with leg abnormalities. Sometimes these birds have outright fractures. The condition is quite similar to the condition found in the Japanese women of the Jinzu Valley.

Making matters worse, cadmium is a cumulative toxin—once ingested, it cannot easily be excreted and accumulates in a bird's liver and kidneys as it ages. If a ptarmigan lives long enough, the cadmium in its kidneys will eventually reach a toxic level, killing the bird. My most recent evidence suggests that in Colorado, it takes only 18 to 22 months for the average ptarmigan to accumulate toxic levels of cadmium—this in a bird that would normally live five to seven years. In a dramatic reversal of the norm, I found that adult birds in Colorado's ore belt tend to produce fewer eggs and fewer surviving chicks than subadult ptarmigan.

Today, we know that cadmium poisoning is not confined to the Animas River watershed; it exists among ptarmigan throughout central and southwestern Colorado. Ptarmigan as far north as the Front Range near Denver and as far south as Silverton are being poisoned. We found high cadmium levels in every ptarmigan population we have examined in the ore belt of Colorado. At the same time, we found near-normal cadmium levels in birds living outside this region.

The key question now is: How much does this toxic metal affect the fitness of ptarmigan? Do populations of poisoned ptarmigan produce fewer young or have a higher mortality rate? And if so, why do ptarmigan persist in these poisoned watersheds?

The answers are slowly revealing themselves. I have spent the past four summers trapping ptarmigan, attaching radio transmitters to the females and numbered leg bands to all adults. I have tracked the reproductive success and survival rates of cadmium-affected populations and have compared these data with those of healthy populations. In addition, I have monitored soil and water quality throughout the region. We now know that the level of toxicity in Colorado's ore belt region is highly variable. Some mountain basins contain high levels of metals and some do not. Often poisoned areas exist side by side with relatively healthy habitats. It now seems likely that healthy habitats may produce excess young each year while unhealthy ones may produce too few chicks. The result may be a fragile balance between healthy and unhealthy populations in which healthy populations act as "sources" and unhealthy ones as "sinks." Although we do not yet have enough data to support this theory fully, it appears likely that the distribution of cadmium, at least in Colorado, may influence the distribution of ptarmigan.

But what about the other herbivores that eat willow? How great is their risk? Before this study, most researchers believed that environmental poisoning by metals was confined to aquatic ecosystems. Now there is good evidence that metals also affect terrestrial organisms, such as the ptarmigan. It is also apparent that mines can exacerbate this problem. Perhaps most troubling of all, we must now admit that alpine ecosystems—which many people believed were one of the least polluted habitats—may not always be pristine.

And what about the risk to people? Is it dangerous to drink the water or to grow and eat vegetables in the ore belt region of Colorado? As the tragedy in the Jinzu River rice fields show, willows are not the only plants that will absorb and concentrate metals. What about lettuce and tomatoes? Clearly these questions demand immediate research attention. What now seems likely is that White-tailed Ptarmigan may be indicators of a broad problem that may affect mountain ecosystems throughout central and southwestern Colorado. ■

James R. Larison is a professor and avian ecologist at Oregon State University. He earned his Ph.D. in ecology at Cornell, where Lab of Ornithology director John Fitzpatrick and Gene Likens served as cochairs of his graduate committee. A summary of his ptarmigan research can be found in Nature *(volume 406:181-183). His research was funded by the National Geographic Society, Colorado Division of Wildlife, U.S. Bureau of Land Management, U.S. Geological Survey, American Ornithologists' Union, American Museum of Natural History, National Science Foundation, Sigma Xi, and Cornell University.*

The House Finch Hot Zone

BY ANDRÉ A. DHONDT, WESLEY M. HOCHACHKA,
SONIA M. ALTIZER, AND BARRY K. HARTUP

Citizen science on the trail of an epidemic

In February 1994, rumors of a terrible new bird disease began circulating on the East Coast. Bird watchers in Maryland reported seeing numerous House Finches with red, crusty, swollen eyes at their backyard feeders. Many of these infected birds were nearly blind in one or both eyes and had difficulty feeding and flying. Although few people found birds that had actually died of the disease, certainly many of these badly infected House Finches must have starved to death or been killed by predators. From its point of origin in Maryland and nearby states, House Finch eye disease, or mycoplasmal conjunctivitis, swept across eastern North America in just two and a half years. And now House Finch numbers in the East are 60 percent lower than what scientists would have expected, based on the previous size and growth rate of the species' populations there. So, some 180 million fewer House Finches exist today than would have if this disease had not emerged.

Mycoplasmal conjunctivitis now figures prominently in research conducted at the Cornell Lab of Ornithology. Our research team was one of only 12 initially chosen by the National Institutes of Health (NIH) and other federal agencies to study how large-scale environmental events—such as habitat destruction, biological invasion, and pollution—affect the emergence and spread of disease in both humans and wild-

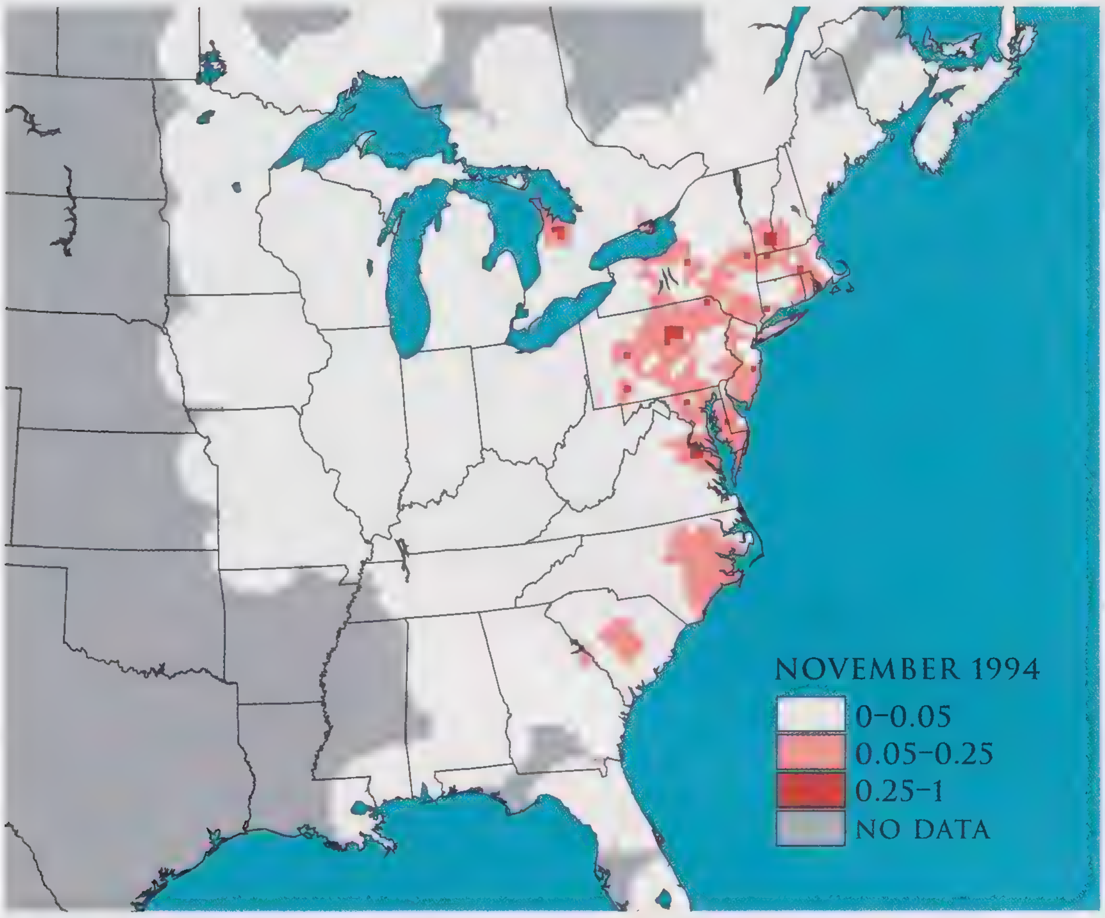
MARIE READ

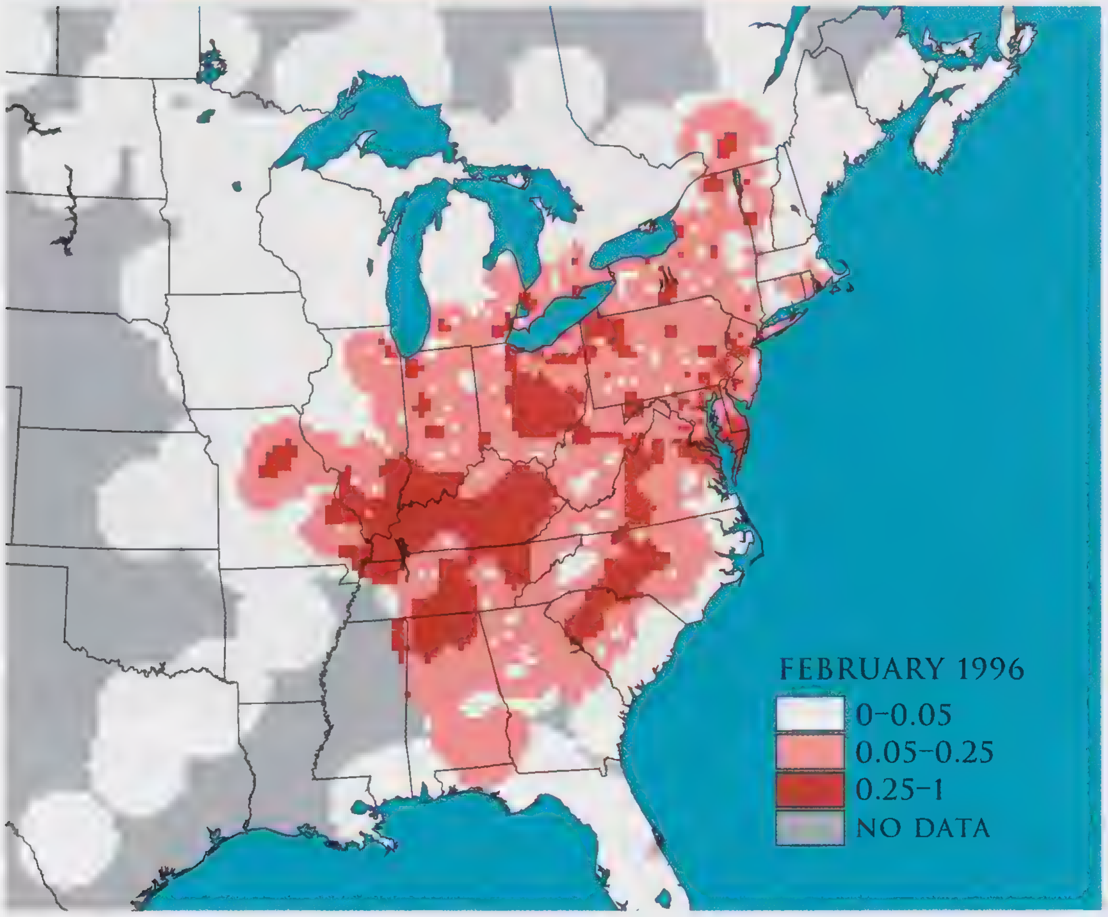
Seven years ago, a mysterious eye disease began sweeping like a firestorm through East Coast House Finch populations. But thanks to FeederWatchers, the Lab of Ornithology had an effective research network already in place to study the spread of the disease right from the start.

life. The Lab's growing involvement in the study of new diseases shows the serendipity of science and highlights the value of the contributions of citizen scientists in studying the world around us.

The birth of a disease—and a research project

When the first reports of sick House Finches surfaced, no one knew what was causing the infection. But a group from the Southeastern Cooperative Wildlife Disease Study at the University of Georgia and David Ley at North Carolina State University quickly went to work, trying to identify the culprit. They found that the birds were infected with a new strain of a well-known and widespread bacterium called *Mycoplasma gallisepticum,* which was common in poultry but had never been detected in songbirds. Because this bacterium was highly contagious, some scientists feared that the new strain would spread rapidly to many other species of North American birds. Even more frightening, however, was the possibility that Neotropical migrants might carry the new disease to the tropics in the fall—a potentially disastrous scenario.





Bird watchers saw most of the diseased House Finches at their backyard feeders, which led scientists to suspect there was a link between bird feeding and mycoplasmal infection. Would people have to stop feeding birds to slow down the epidemic? Or would removing bird feeders cause infected birds to disperse farther and spread the disease even more rapidly?

Our research team soon realized that the citizen scientists who took part in the Lab's Project FeederWatch could help answer these and many other critical questions. FeederWatchers had been collecting information about their winter feeder birds since 1988. We had a massive, fully functioning network of skilled observers already in place, collecting data from across the United States and Canada. We realized that we could launch a continentwide survey and begin collecting data and tracking the spread of the disease within months after the first cases of mycoplasmal conjunctivitis were reported. With this revelation, the House Finch Disease Survey was born.

Designing the first survey form was a challenge, because we knew so little about the disease. Were all birds that came to feeders susceptible or just House Finches? Were eastern House Finches especially vulnerable because they had been introduced to the area recently and did not have as much genetic variation as native species? We eventually decided to request information on a number of other species in addition to House Finches—including Purple Finches, House Sparrows, Black-capped Chickadees, and Dark-eyed Juncos—based on how closely related they are to House Finches and how frequently they use feeders. To leave all options open, we added a category for "other birds."

Another challenge in implementing this survey was to encourage participants to submit "negative data"—that is, records of healthy finches they had seen or even no House Finches at all. We feared that some participants would think that their contributions were unimportant if they saw only healthy birds. So instead of asking for yes or no answers to questions such as "Did

MARIE READ

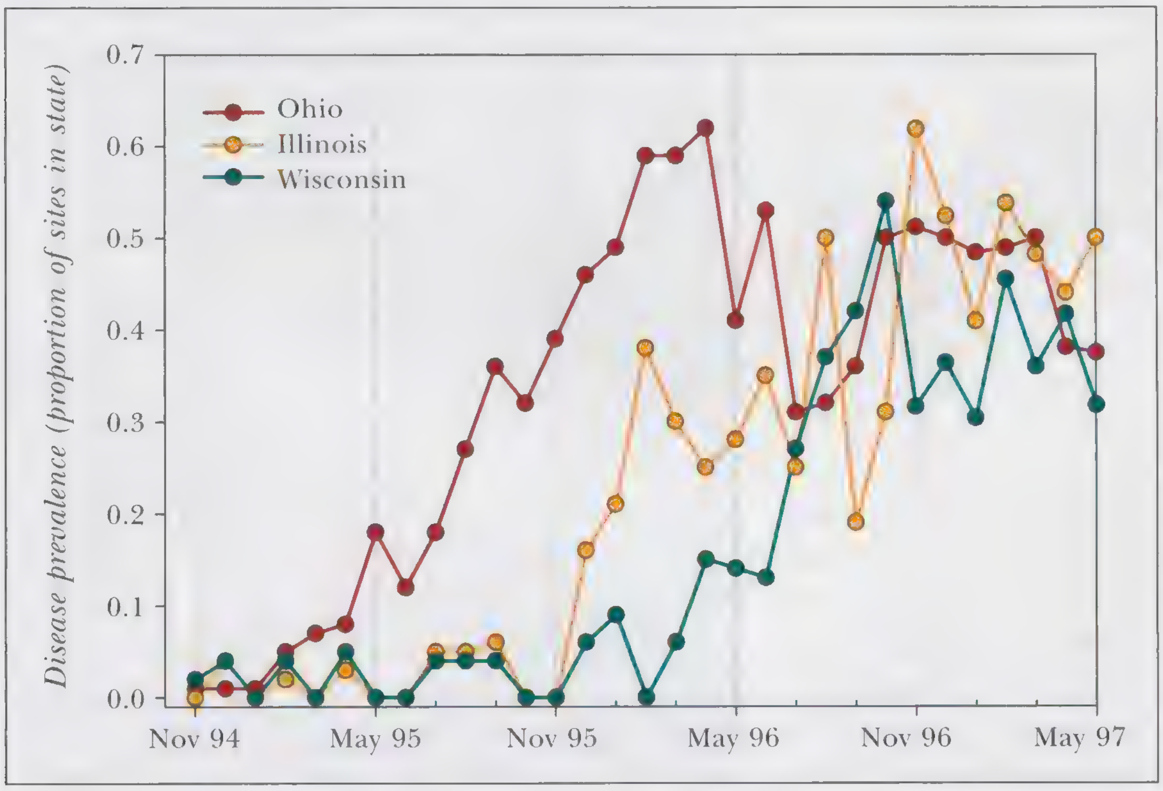
you see any House Finches?" or "Did you see sick birds?" we asked observers to fill separate bubbles on the data form for each day they watched their feeders, each day they saw House Finches, and each day they observed diseased birds. Participants who watched their feeders but did not observe any birds, therefore, still reported their efforts.

After we settled on the questions we wanted to ask, our graphic designer created forms that we could scan into computers after observers had filled them out. We ordered 60,000 copies—a big gamble because we had no way to predict whether the disease would fade away or expand into a full-blown epidemic. In September 1994, we mailed six monthly data forms to 9,000 eastern FeederWatchers and asked them to begin reporting in November 1994. Then we waited.

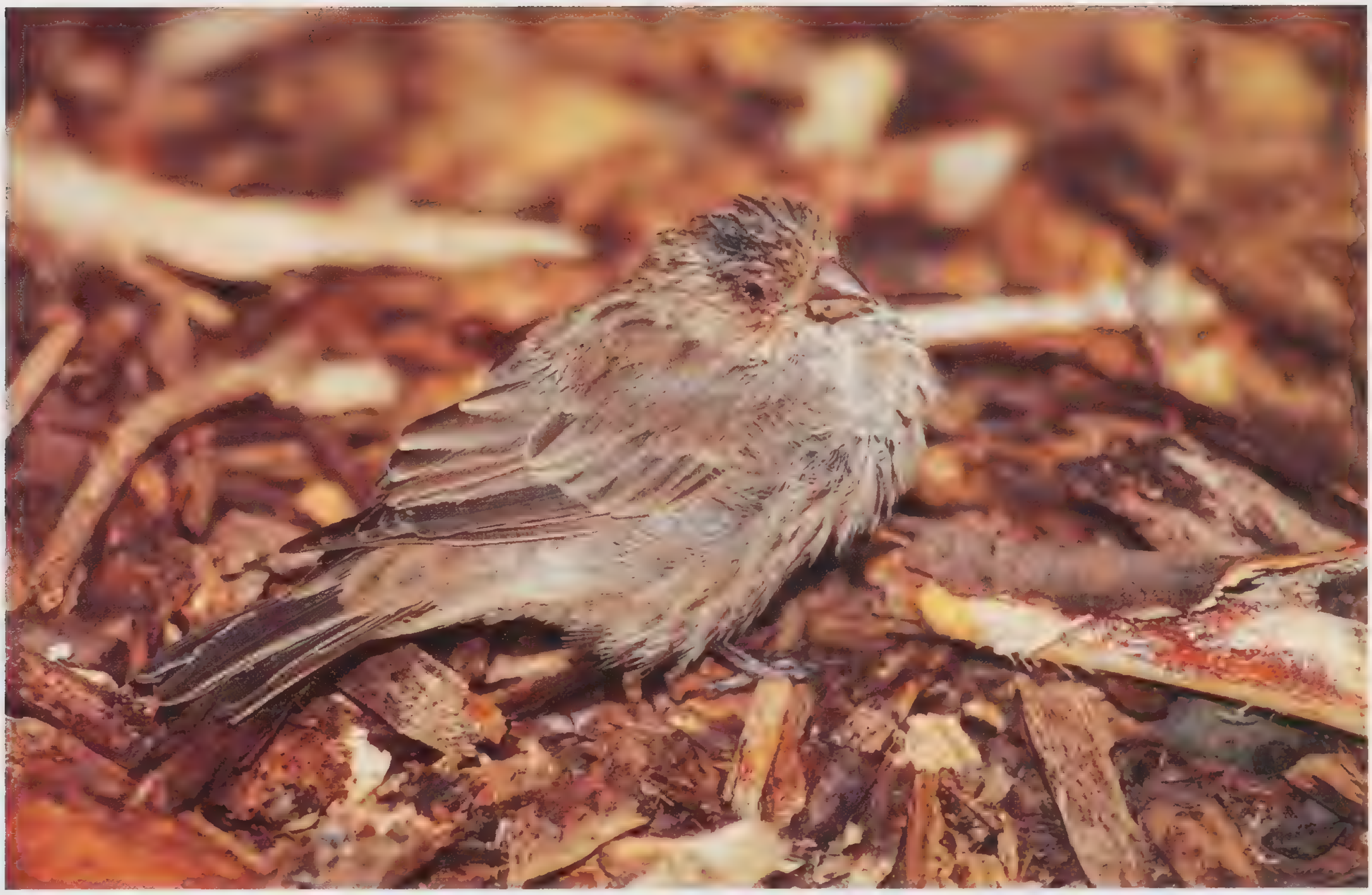
On the trail of an epidemic

By early December our mailbox was overflowing, as 3,212 participants sent us their observations. We immediately produced a detailed map showing the prevalence of conjunctivitis in eastern House Finches during November 1994. The results were surprising. Within 10 months of its discovery, the disease had invaded an area from eastern Ontario to southern Virginia. The epidemic was well established along the Atlantic Coast, reaching western New York, western Pennsylvania, and West Virginia. Isolated reports from as far south as Georgia and as far west as Wisconsin showed that the disease was capable of spreading long distances, carried by migrating or dispersing birds.

As participants continued to send data to the Lab each month, we followed the epidemic across eastern North America. From its origin near Washington, D.C., the pathogen initially spread most rapidly to the north and northeast, probably carried by House Finches that had wintered in Maryland and Virginia before returning to their breeding grounds. By February 1995, just one year after the first infected finches had been reported, FeederWatchers had documented considerable proportions of House Finches with eye infections from Georgia and Kentucky to Vermont and Wisconsin. So many observers submitted data that we were able to describe how the disease invaded



Infected House Finches were showing up at many eastern feeders. Did this mean that people would have to stop feeding birds to prevent the spread of disease, or would removing feeders only cause infected birds to disperse farther and perhaps spread the disease faster? No one knew at first. The maps on the facing page—based entirely on House Finch Disease Survey data—show the proportions of feeders where diseased birds were reported and offer a graphic depiction of the swiftness of the spread of the disease. In just 15 months, between November 1994 (top) and February 1996 (bottom), the eye disease swept across much of the eastern and southern United States and deep into the Midwest. Thanks to the volume of data from participants, Lab of Ornithology scientists could track in great detail how the disease invaded state after state as it moved west, as shown in the graph (below left), which traces its progress through Ohio, Illinois, and Wisconsin.



TIM GALLAGHER

and became established in state after state as it moved west from Ohio to Wisconsin (see graph). Interestingly, as the epidemic moved farther away from the core of the disease's range, multiple local flare-ups of disease appeared before a full-fledged epidemic took off.

Even during the epidemic, however, the vast majority of participants only saw healthy birds. Fortunately, this did not stop them from submitting their observations. If people had only reported seeing infected birds, we would have severely overestimated the extent of the disease. Moreover, without records of healthy birds in newly invaded regions, we would not have been able to see the geographic expansion of the disease in such detail.

Shortly after we initiated the House Finch Disease Survey, a glaring weakness became apparent. The survey measured the proportion of sites with diseased birds present, but we still needed to establish the link between the presence of the bacteria and visible symptoms of the disease. Fortunately, in 1996, Barry Hartup, a graduate student at Cornell's College of Veterinary Medicine, decided to address this critical problem. In collaboration with Lab member and bird bander Jean Bickal in New Jersey, Hartup trapped hundreds of House Finches and carefully swabbed their inner eyelids, hoping to obtain a sample of the pathogen. His work showed that a close link existed between the presence of the *Mycoplasma gallisepticum* bacteria and symptoms of eye infection. The House Finch Disease Survey results, therefore, truly represented the prevalence of mycoplasmal conjunctivitis across time and space.

A deadly disease

House Finch Disease Survey participants continued to submit data even when they no longer saw any House Finches at their feeders, so we were able to document that in areas with cold winters and a high prevalence of the disease, House Finches disappeared toward the end of winter. This showed that in certain conditions the epidemic caused House Finch populations to decline in numbers, but it still didn't tell us how many House Finches had disappeared.

Geoffrey Hill of Alabama's Auburn University has produced outstanding work on House Finches for more than a decade. When the epidemic swept through his House Finch population on the Auburn campus in late 1996, Hill documented the results in detail. He found that up to 60 percent of his birds contracted eye infections. Hill's team also estimated that the Auburn population crashed rapidly in the wake of the epidemic. But were House Finch populations crashing across their entire eastern range?

We were able to answer this question only because for more than a century people have been collecting and storing data on the abundance of North American birds in the Christmas Bird Count. By combining data from the Christmas Bird Count with our survey, Wes Hochachka and André Dhondt showed that two to three years after the disease became established, House Finch numbers declined dramatically in regions where populations had previously been stable at high densities. In other regions, the epidemic appeared to slow the growth of House Finch populations. All told, eastern House Finch abundance was only about 40 percent of the expected abundance in healthy populations.

Perhaps even more surprising than the dramatic decrease in House Finch numbers was the tenacity of the disease. When a disease kills a large part of a population, it tends to fade away rapidly, both because infected individuals die before they can pass on the disease and because pathogens spread more rapidly in dense populations. A milder disease often persists longer because it can spread effectively for longer periods. House Finch eye disease is unusual because it has persisted for so long, despite having eliminated a large proportion of House Finches in eastern North America.

The quest continues

Now in its sixth year, the House Finch Disease Survey has yielded a series of intriguing patterns and allowed us to measure seasonal and regional variation in the spread of the disease. We now know that the prevalence of the disease varies markedly through the year, peaking during the fall and winter and declining precipitously during the breeding season. We have documented that the disease has caused declines in the numbers of House Finches. And we know that the disease is not disappearing.

But these results have only whetted our scientific appetite to understand why this is happening. Why House Finches? Why has the disease persisted? Why haven't affected House Finch populations recovered? Answering all of these questions would require the talents of a larger group of scientists and increased funding.

In late 1999, when the National Institutes of Health requested proposals for research on the ecology of infectious diseases, we were in the right place at the right time. We knew a great deal about the disease and all of the questions we wanted to ask. On the strength of our proposal, the NIH provided the funding that we needed, not only to describe the patterns of this epidemic in North American birds but actually to understand the processes underlying seasonal and geographic variation in the spread of disease.

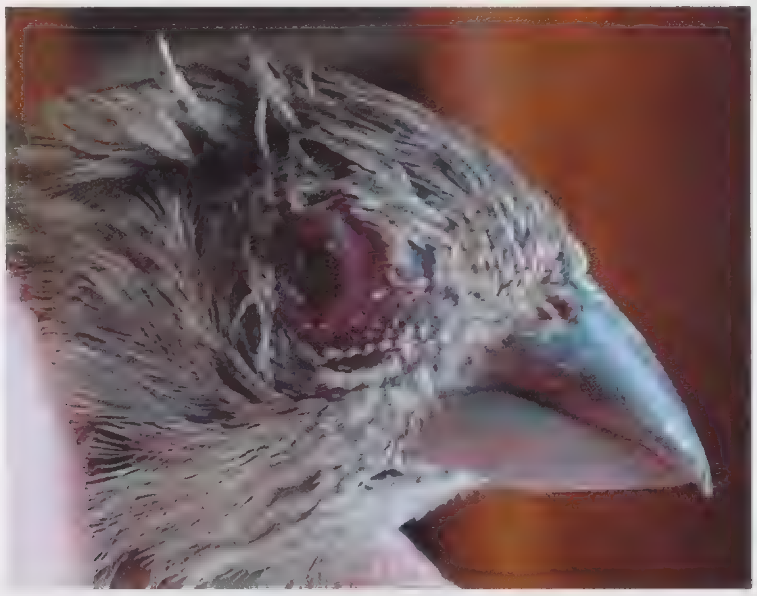
Our current team includes more than 15 collaborators from several institutions: four veterinarians, a mycoplasmologist (who is also a veterinarian), three bird population ecologists, two mathematical modelers, two full-time field technicians, and several graduate students and undergraduate volunteers. We collectively offer expertise in a diverse array of fields, including mark-recapture analysis, bacterial ge-

WHAT CAUSES THE DISEASE?

Mycoplasma gallisepticum is a bacterium that causes disease in poultry and other birds. Some strains of the bacterium are known to infect the respiratory tract of chickens and reduce egg production. The "House Finch strain" of *Mycoplasma gallisepticum* is a previously unknown strain that causes eye infections in wild House Finches, Purple Finches, American Goldfinches, Evening Grosbeaks, and Pine Grosbeaks, but it has only caused a major epidemic among House Finches. Chickens exposed to the House Finch strain develop an extremely mild form of the disease.

You can join the House Finch Disease Survey by signing up online at <http://birds.cornell.edu/hofi/signup.html> or by calling the Cornell Lab of Ornithology at (800) 843-2473.

ANDREW DAVIS (2)



Although few dead House Finches were found that had been killed directly by the eye disease, certainly many must have starved to death or been captured by predators. Some infected birds (at left) have difficulty flying.

TIM GALLAGHER (2)

Lab of Ornithology researchers (above) have been trapping local House Finches as part of the study. They weigh, measure, and band each bird, and also take a blood sample and a swab of the bird's eye to check for the presence of the disease. The birds are then released.

netics, disease ecology, avian health, behavioral ecology, and bird population studies. In our quest to learn how the disease can spread and persist, we are discovering new facts about the winter ecology, behavior, and movements of House Finches in different parts of their range. We are investigating feeder use, flock size, and interactions among flock members. Finally, we are gathering new information on routes of disease transmission and host responses to infection, including remission and recovery.

Although our work might look like conventional scientific research, we are relying on an unconventional resource—a powerful and expansive network of citizen scientists—to help answer our questions. Our success depends on having House Finch Disease Survey participants to continue monitoring the presence and absence of the disease across the continent. We are also recruiting bird banders to help us follow the movements of House Finches, and possibly the disease, year-round. We hope that with such unique collaborations between professional and citizen scientists we can find the reasons for the emergence and spread of mycoplasmal conjunctivitis in House Finches and contribute to a larger understanding of the dynamics of infectious disease. ■

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FALCONS OF THE FLORIDA KEYS

Hawk-watcher Jon Larabee releases a newly banded Merlin, just minutes after trapping it in the Florida Keys. Veteran hawk watchers were stunned when they learned how many raptors were passing over these islands and across the adjacent broad expanses of open water. Last autumn alone, observers tallied 39,349, including 2,043 Peregrine Falcons (above right).

Text and photographs by Beth Davidow

Peregrine Falcons, Merlins, and other magnificent raptors migrate through this picturesque chain of islands each autumn

Freeze!" whispers Jon Larabee. "Merlin coming in." I sit motionless on a narrow wooden bench in the blind. With a rush of tapered wings, the Merlin dives into a mist net, and Jon races out to untangle her. A moment later, he is back in the blind with the bright-eyed Merlin lying calmly in his hand. He carefully weighs and measures her, attaches a numbered metal band to her leg, jots down the information, and then releases her to continue her southward journey over the Florida Keys.

When most people think of the Florida Keys, raptor migration is not the first topic that comes to mind—even if they're birders. But actually these tiny islands are one of the premier sites in North America to watch migrating Peregrine Falcons and several other raptor species. The main reason it took so long for hawk

BHL

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watchers to discover this southern flyway is that migrating raptors elsewhere—for example at Cape May, New Jersey, or Whitefish Point, Michigan—seem to avoid flying over large stretches of open water. Few students of hawk migration thought raptors would fly through the Florida Keys, crossing miles of open water between the islands and an even greater expanse to the south.

"The Keys are a major hotspot for raptor migration, and we're just starting to quantify the timing and extent of it," says Casey Lott, project director of the Florida Keys Raptor Migration Project. "Our count total for the year 2000 was more than 39,000 birds, including 2,043 Peregrine Falcons. Perhaps raptors are a bit less afraid of water than we previously thought."

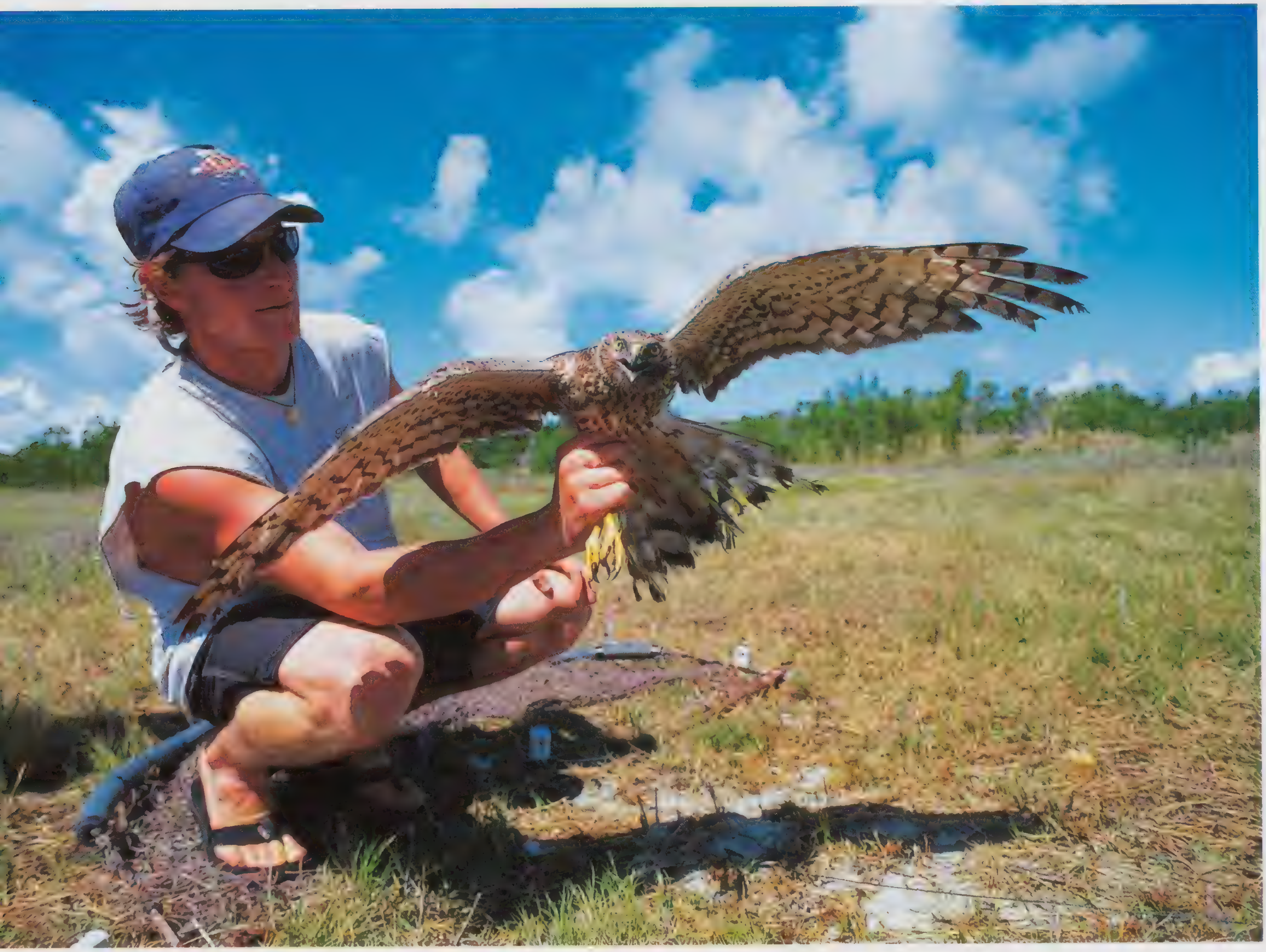
The Florida Keys Audubon Society organized the first count of migrating raptors in these islands in October 1988. Astonished hawk watchers counted 200 Peregrine Falcons in a single day. Since then, counters in the Keys have tallied whopping one-day Peregrine Falcon totals: 379, 354, and 351—the highest counts for this species recorded at any raptor-migration site in North America.

In the beginning, the watches took place on a single day in October, at sites scattered throughout the Florida Keys. But the observers quickly found that raptor counts were consistently highest in the middle Keys, so that area became the primary focus of the count.

Cindy Brashear, a graduate student at Florida International University, read about the Florida Keys annual raptor survey in a 1992 issue of *Hawk Migration Studies.* She soon began conducting her own counts, at first on Boot Key. But she found that the island had some inherent problems as a raptor-monitoring site. Just south of it lies seven-mile-wide Moser Channel—the widest water crossing in the Keys. Raptors arriving at Boot Key during the afternoon often roost there before attempting the crossing.

"Around three o'clock in the afternoon, rap-

Larabee removes a Northern Harrier from a bownet trap at Curry Hammock State Park. The raptor banding station has only been in operation since 1998, but the first organized count of migrating raptors on the Florida Keys took place a decade earlier. During that one-day count in October 1988, hawk watchers counted an astonishing 200 Peregrine Falcons (facing page).



DOUG WECHSLER/VIREO

tors start to pile in," says Lott. "They mill about and forage in the area before roosting. In the morning, individual birds often soar over Boot Key for half an hour or so until good thermals develop and then they begin to migrate. It's virtually impossible to avoid double counting." Brashear found a site to the north on Grassy Key, far from any major water crossing. The hawk flights tend to flow in one direction there, making it is easier for observers to avoid double counting. Brashear conducted the first full-season raptor migration counts in the Keys at this site in 1996. Lott worked for her as an observer that year. When Brashear graduated and left the area the following year, Lott and HawkWatch International established a raptor migration monitoring, research, and education site in the Keys. The group set up a banding station in 1998 and the following year inaugurated a long-term raptor count at Curry Hammock State Park.

"This site is perfect for us," says Lott. "We're right in the narrowest part of the middle Keys, the observation deck has a great view of the flight path of migrants to both the north and the south, and there is plenty of space for visitors."

During the 1999 count, observers tallied 23,426 raptors of 16 different species between September 15 and October 30. That season was especially interesting, because on October 16 Hurricane Irene slammed into the Keys, dumping 16 inches of rain in eight hours, knocking down trees, and drowning the bird-banding station. But it didn't appear to impede the migration. The very day after the storm, observers logged 591 American Kestrels. But the peak flight of the season—a total of 2,652 assorted raptors—came over on October 18, two days after the hurricane.

"When a hurricane is east of the Keys," explains Lott, "winds moving counterclockwise around the center of the storm blow raptors in the direction they want to go, and we often see unseasonably large flights of migrating raptors. Hurricanes may actually provide a good

opportunity for raptors to ride a tailwind south. Recurring conditions like these, which favor long water crossings, may have been part of the evolution of this flyway."

Educators at Curry Hammock have reached hundreds of children and adults throughout the Keys with classroom presentations and community slide shows. In mid-October, the Florida Keys Birding and Wildlife Festival draws birders from across the state to the site. The festival is a popular weekend destination for people who come to watch raptors, attend presentations, and enjoy the camaraderie of fellow raptor enthusiasts. Many people who have never gone birding also attend. Twelve-year-old Jackie Kaulen, from Key Largo, recently had a chance to hold and release a banded Sharp-shinned Hawk there. "Wow," she said, "That's the first time I've ever seen a hawk this close."

Last year, during the Birding and Wildlife Festival, hundreds of people visited Curry Hammock to spend time at the observation station, learning how to identify raptors and watching the birds being banded. The weather on this October weekend was right out of a travel brochure: blue skies, light fluffy clouds sailing over a calm sea, and palm trees waving

HOW TO GET THERE

The Florida Keys Raptor Migration Project is located on Grassy Key at Curry Hammock State Park, at mile marker 56 on Highway 1, just north of Marathon, Florida. Look for the yellow "HawkWatch" sign pointing into the park. Drive straight down the main road past the ranger's house and turn right at the "T" intersection. You'll see the bathhouse with the observers on its balcony. Observers can direct you to the observation blind at the banding station. The project runs daily, 9:00 A.M. to 5:00 P.M., from September 15 to November 13. For more information, visit the project's web site at <http://www.keysmigration.org> or send an e-mail message to <keysmigration@hotmail.com>.

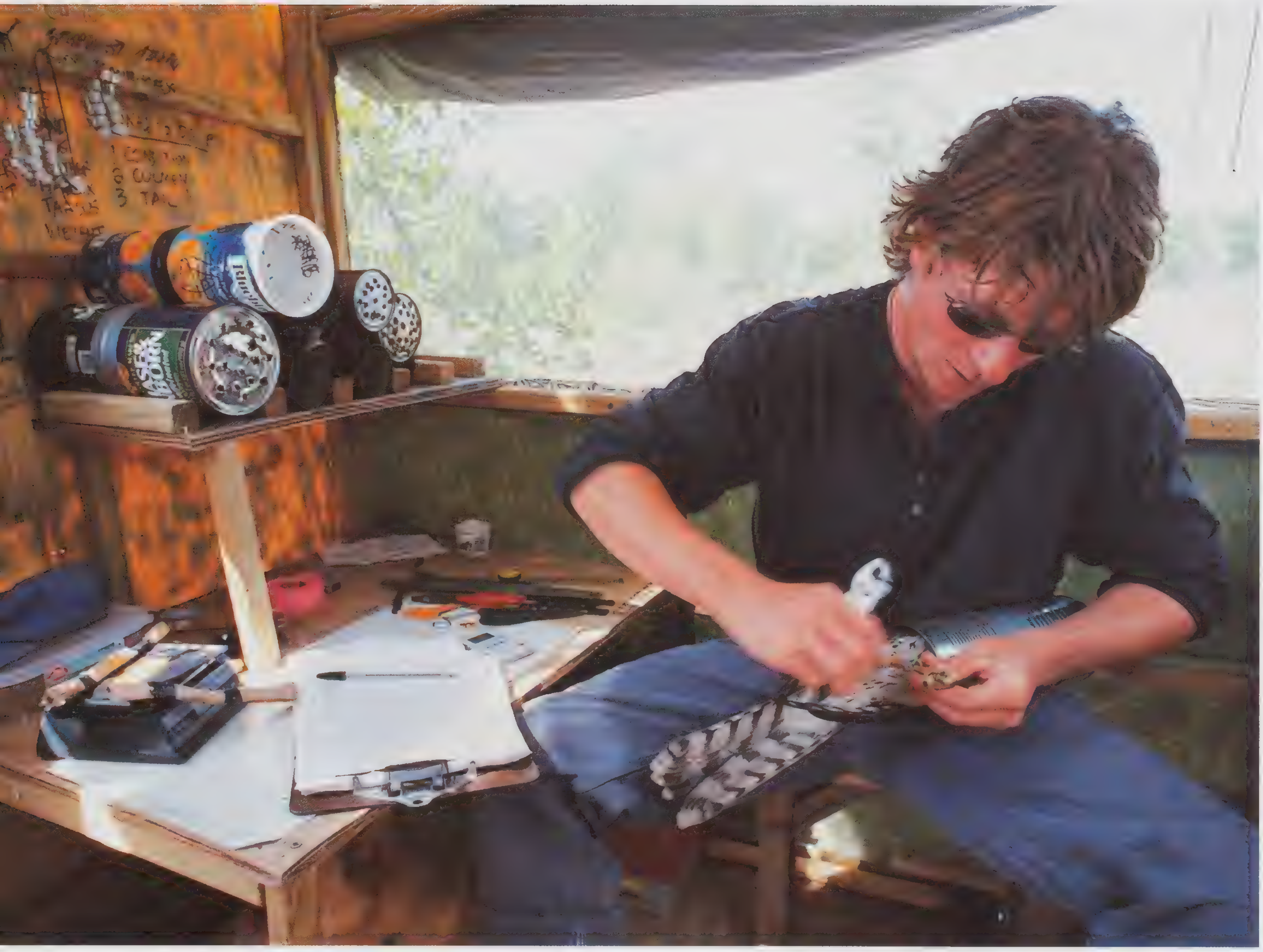
in the breeze. Observers gathered on the deck, calling out their sightings: "Peregrine low over the hill." "Merlin above third pole left of twin pole." "Kestrel over tallest palm tree." "Sharpie, heading south."

"The great thing about Curry Hammock is that we can see what direction the birds are heading, so we can record that information along with the species observed," says Derek Lovitch, a veteran hawk watcher who helps visitors to spot birds. "Broad-winged, Cooper's, and Sharp-shinned hawks, and Northern Harriers are among the raptors heading south."

The observers sometimes also see Short-tailed Hawks—uncommon but year-round residents of south Florida. "We'll see about 30 of them soaring over in late October and early November," says Lott. "They'll be in kettles with vultures, mixed in with more Swainson's Hawks than are recorded at any other hawk-watch site east of the Mississippi."

During the 2000 count, the observers tallied an amazing 39,349 raptors, including 2,043 Peregrine Falcons. Where are all these birds coming from? According to Lott, in 1998—the first year of the banding project—researchers at Curry Hammock trapped two Peregrine falcons that had been banded as nestlings in Alaska. "One came from the Colville River on Alaska's North Slope, the other from the Tanana River, near Denali National Park," he says. Unfortunately, however, the vast majority of the birds they trap are unbanded, so determining their point of origin has been much more complicated than just looking up a banding record. To help remedy this situation, Lott and the other researchers are taking feather samples from each bird they trap and then using a technique called stable isotope analysis to identify these migrants' breeding grounds. Birds incorporate hydrogen, carbon, nitrogen, and other elements into their feathers as they grow. By collecting a feather and analyzing its chemical composition, biologists can detect an "isotopic signature," a ratio of isotopes of each element that differs depending on the region and habitat. HawkWatch International has already used this technique to show that most immature

Many visitors from across Florida come to Curry Hammock in mid-October, during the Florida Keys Birding and Wildlife Festival. They come to watch migrating raptors, attend presentations (facing page), and mingle with fellow raptor enthusiasts. Twelve-year-old Jackie Kaulen, a visitor from nearby Key Largo, had a chance to release a Sharp-shinned Hawk (below).



Back in the blind at the trapping site, Larabee attaches a band to a Cooper's Hawk (above). Before releasing it, he snips a few small feathers, which will be analyzed to determine the approximate area where the hawk was born.

Cooper's Hawks migrating through the Florida Keys come from nests in the Mid-Atlantic and Southeast regions.

The Florida Keys Raptor Migration Project is a long-term project aimed primarily at monitoring the population trends of Peregrine Falcons, now that they have been removed from the Endangered Species List, and also documenting trends for nine other common raptor species. "There's still a lot of mystery about this flyway," says Casey. "With a consistent location to observe the migration in the Keys, the education and public awareness that go with it, the banding, and now the isotope studies, I think we'll see some amazing things come out of this project in the years ahead."

As Jon Larabee and I wait in the blind near the mist net, two hatch-year Peregrine Falcons—a male and a female—come swooping into view, hunting for prey. I feel a rush of adrenaline as both raptors simultaneously fly into the nets and Jon races out to get them. Soon, both falcons are back in the air, with bands on their legs, their measurements recorded, and a few feathers collected. But not five minutes later, we again watch a peregrine dive into the net and Jon dashes outside once again to retrieve it. It's the same female we caught just a moment ago. As he releases the falcon, Jon laughs. "This is the only place in the world I know of where you can catch peregrines even when you don't want to!" ■

Beth Davidow is a freelance writer and photographer who lives in Miami, Florida.

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SNAP JUDGMENTS

by Kevin J. McGowan

Document rarities and boost your birding enjoyment with a pocket digital camera

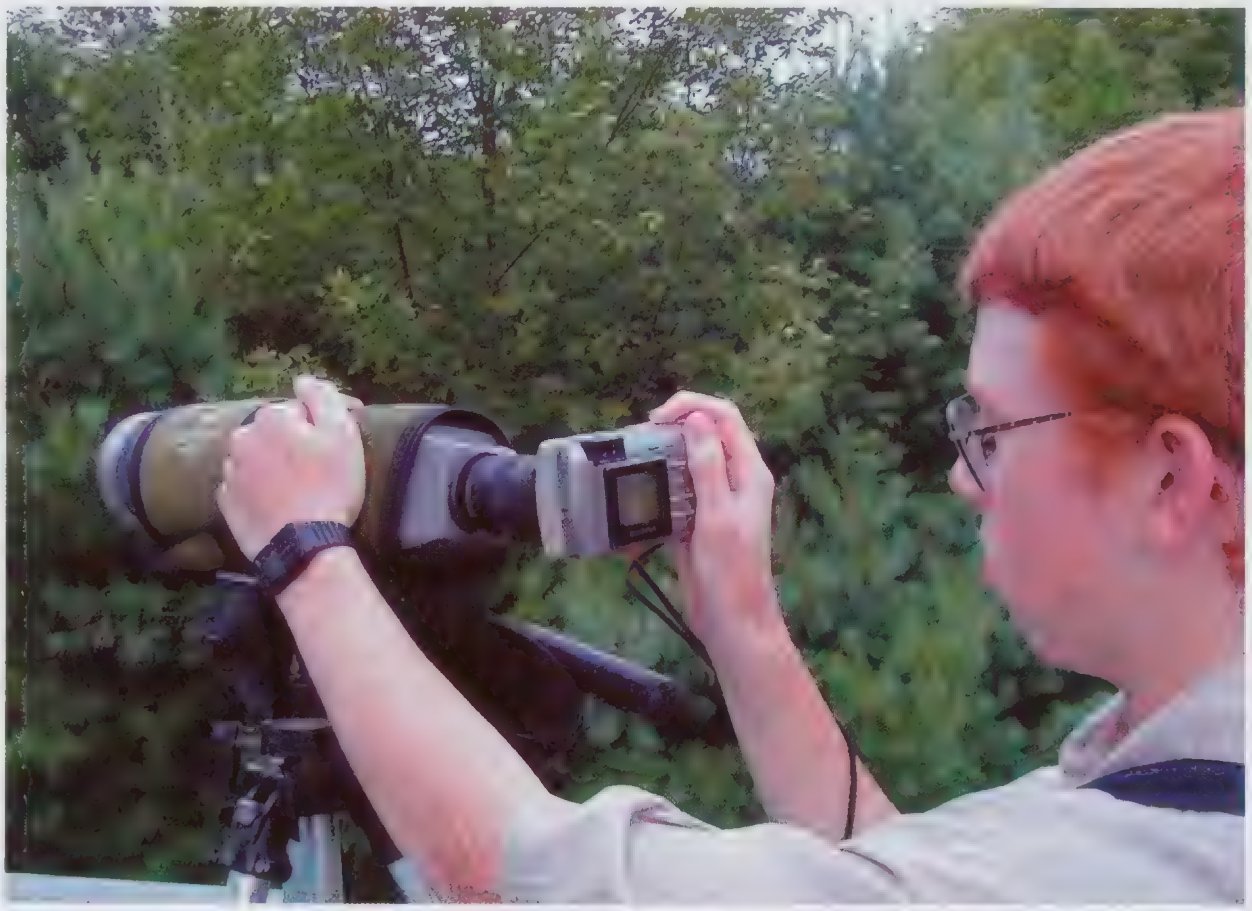
Unlike most articles that appear in this column, this one will not show you how to take spectacular, beautifully composed images that will dazzle your friends and earn you international recognition as a bird photographer. It will not tell you how to approach wary birds with your camera, what kind of filters to use to enhance the contrast or color in your images, or how to earn enough from your picture sales to retire early. What it will do is show you a simple way to use a pocket digital camera to boost your enjoyment as well as your effectiveness as a birder.

With a digital camera you can freeze a bird's image—not just in your mind's eye, on a sketch pad, or in some hastily scribbled field notes, but in a high-resolution digital file that you can view full size and in color on a computer screen. You can then compare it with photographs or illustrations in books or with actual museum specimens. Moreover, if you need help identifying a bird, you can e-mail the image instantly to friends or bird experts around the world.

It was only a couple of years ago that I replaced my aging 35mm single-lens-reflex camera with a digital model. At that time, 1.3 megapixel digital cameras were finally coming in reach of my budget ($500 maximum). I chose an Olympus D-450 camera, though several other models and brands would probably work equally well. It has 1.3 megapixel resolution, a 3x zoom, macro capability, and is small enough to use with one hand (which is useful in my crow research when I want to take pictures of nests and young in the tops of tall trees without having to let go of the branch with both hands). The camera was great for close-up shots like these and for taking pictures of museum specimens.

Then one day my 13-year-old son Jay (my main birding companion) had the brilliant idea of holding the camera up to our spotting scope to take pictures of birds. As an experiment, we focused the scope on some gulls, put the camera up to the scope's eyepiece, and pressed the shutter-release button. Amazingly, it worked. I won't say it was the best gull picture I've ever seen, but the birds were certainly identifiable. From then on, Jay and I were hooked. We spent more and more time taking pictures of nearly every bird we viewed with our scope. We gradually polished our technique until we were getting not just passable pictures but actually some really good ones. As we played with our new camera, I came to realize that this digital camera/spotting scope combination (or "digiscoping" as it's come to be called) was the perfect tool for documenting rare or unusual birds.

In April 2000, Jay and I took some nice pictures of a vagrant Western Meadowlark in Dryden, New York. Although Western and Eastern meadowlarks are easy to differentiate by song, distinguishing between them by markings alone is tricky. In the pictures we took, however, the yellow malar ("mustache") marks and the distinctive markings on the Western Meadowlark's tail and wing feathers were plainly visible. When I compared the digital images we took of this bird with photographs of a series of specimens of Eastern and Western meadowlarks at the Cornell University Museum of Vertebrates, our photo-



PHOTOGRAPHS BY KEVIN AND JAY McGOWAN

Bird photography can be as easy as holding a point-and-shoot pocket digital camera up to the eyepiece of your spotting scope and, voilà! An instant crow portrait.

Because we have no way to attach our camera solidly to the scope, vibration is sometimes a problem. Any shaking of the camera and scope when we're taking a picture causes a fuzzy image. But Jay and I have gotten much better at keeping the camera steady. I usually hold the camera in my right hand, using my right index finger to press the shutter release. My left hand rests on the scope, with my thumb supporting the camera and my index finger steadying the connection. Although using a camera-scope adapter might increase the number of sharp images we produce, in some ways the extra time required to set it up would make it more trouble than it's worth. The big advantage of not having the camera attached to the scope is the speed at which we can change from looking through the scope to putting the camera in place. It is difficult to follow moving birds by just watching the viewing screen on the camera, but we can quickly relocate a bird with the scope and whip the camera up to take another picture. We are, after all, out there primarily to watch birds. And if we happen upon an interesting one, it only takes seconds to set up the camera and take a picture.

graphs provided convincing documentation of this rare vagrant's presence in New York State.

Now Jay and I never go birding without our digital camera. We have even changed the focus of our listing game from trying to see the most species we can find each year in the Cayuga Lake Basin to trying to take identifiable pictures of as many different species as possible (we photographed 250 species in 2000). And we are amassing photographs of birds engaged in a variety of interesting behaviors: scratching, preening, singing, stretching, sitting on nests, and more.

Because a digital camera is small and costs little to operate, it's easy to take it everywhere with you. And the whole rig is ready in seconds, so you can take a picture of a rare bird quickly and easily, using the spotting scope you already have set up to view the bird. Even a technophobe can take decent pictures and view them instantly to see how well they turned out. And the images are already in a digital form, ready to be printed out, put on a web site, or sent as e-mail attachments instantly without having to scan them.

Jay and I already have submitted rare bird reports to the New York State Avian Rarities Committee with digital images imbedded in the report. As a voting member of the committee, I hope such reports become more and more common. I find it a lot easier to make a decision on someone else's sighting when the person includes a photograph, and the easier it is for people to take pictures of rare birds, the more likely they are to do it.

Taking these pictures is simple. You start by turning on the camera's external screen and then holding the camera up so its lens is right up against the spotting scope's eyepiece. We usually zoom up to the 3x maximum magnification so that the sides of the spotting scope are not visible in the image. Trying to find the exact center of the beam of light coming out of the scope eyepiece can be difficult at first. But the large screen on the back of the camera lets you make sure that the entire image area is visible and well lit. When you have the image arranged properly, depress the shutter-release button halfway to take a light-meter reading and an approximate focus. (Sometimes you have to hold the button halfway down first so that the camera is partially adjusted to the darker view in the scope and you can see what we're doing.) If necessary, use the focus wheel on the scope to sharpen the image further.

I should mention that this technique is more difficult than using a conventional 35mm camera with a telephoto lens; it takes more time to find the bird with the scope, set up the digital camera, and sharpen the focus before taking the picture. On the other hand, to take pictures with a conventional camera and lens setup at the magnifications we often use, you would have to use telephoto lenses in the 1000mm to 3000mm range, which tend to be huge, heavy, and prohibitively expensive.

One of the great advantages of digital photography is how inexpensive it is. Once you've made your initial equipment purchase, the pictures are practically free. All it costs us is computer disk space and the electricity required to recharge our batteries. Consequently,

Kevin and Jay McGowan took dozens of interesting digital bird portraits, such as this shot of a White-winged Becard, on a recent trip to the Amazon.

we have no qualms about taking 100 pictures of the same bird, trying to get closer to it or capture it engaged in an interesting behavior. And you can erase any pictures you don't want, right on the spot.

We use only rechargeable nickel metal hydride batteries. One set of recharged batteries used under normal conditions is good for about 130 pictures. We always carry along an extra set of recharged batteries in case the set in the camera runs out. When we get home (or back to the motel), we charge the drained ones and keep them in reserve. Non-rechargeable batteries are not worth considering if you're anywhere near an electrical outlet. We use the screen on the camera back constantly, so the batteries drain quickly. On a recent trip to the Amazon (where we couldn't recharge batteries), each of our cameras used at least one set of non-rechargeable alkaline batteries every day (one set for every 50 pictures or so). The high humidity shortened the life of the batteries considerably, and we ended up going through 20 sets during our trip.

The memory cards used in digital cameras can hold more photographs than a standard roll of film. Using the high resolution setting on our camera, we get about 36 photographs on a single 8-megabyte Smart Media card. At lower resolution, however, we could get 120 pictures on the same card. And we have purchased a number of larger memory cards. I usually keep a 32-megabyte card in the camera (144 and 480 photos), and I rarely run out of space in the field. For our Peru trip, we bought two 128-megabyte cards and several 32s and 16s. We had sufficient capacity to take nearly 2,000 photographs, and all of the cards fit in a single slide box. And once you download the pictures to your computer, the cards are blank and ready to be filled up again.

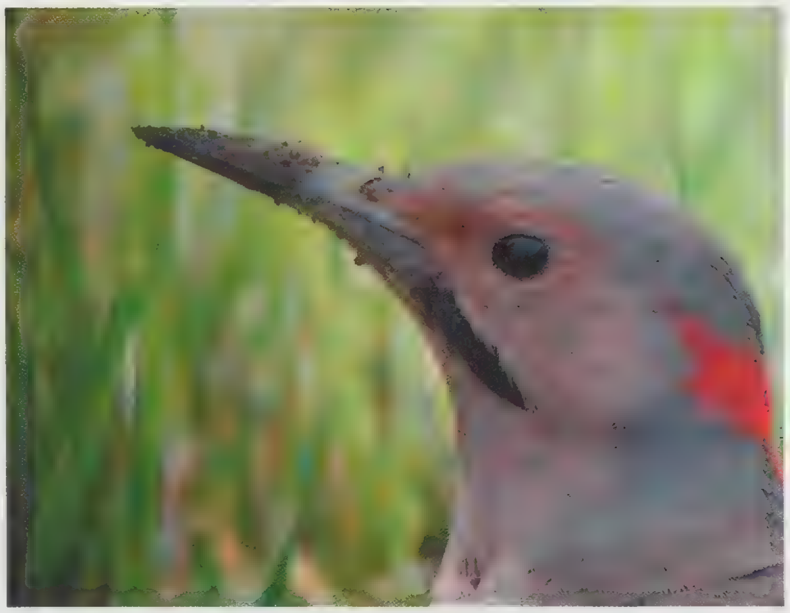
One of the great advantages of digital cameras is that they allow you to look instantly at the pictures you have taken. Thus you get to enjoy the pictures immediately and share them with others, and you can see whether you actually got the shot you were after while there's still time to take another.

In addition, the exposure controls on a digital camera allow for some flexibility in your exposures. You can rapidly shift to spot metering to compensate for a back-lit subject, darken or lighten the image a little, or change shutter speeds, all while looking at the back of the camera. Of course, good 35mm cameras let you do all this and more, but you can do some fairly sophisticated exposure manipulations with even the simplest "point and shoot" digital camera.

Once you get your images home, you can easily adjust or enhance them using a variety of software programs. I usually crop photographs to get rid of unwanted clutter or to reposition the bird in the frame. Slight adjustments in brightness and contrast can improve the image and make important details more visible. If you make a dark image brighter, many hidden details will appear, but images that are too light can rarely be corrected adequately. And fuzzy pictures—whether digital or conventional—can't be sharpened appreciably.

We've had our best luck taking pictures when the scope's zoom eyepiece is set on a fairly low magnification. When you zoom up, image quality quickly deteriorates and the picture-blurring effects of vibration become more pronounced. We get our best results by using the lowest power on the scope and the high-resolution setting on the camera. We can zoom in digitally later with a computer. Still, we have taken some decent photographs with our scope zoomed to its 60x maximum magnification. When viewing a really rare species at a great distance, it's definitely worth attempting to take a shot. Better yet, snap a bunch of pictures. One of them might just show the character needed to confirm a mystery bird's identification.

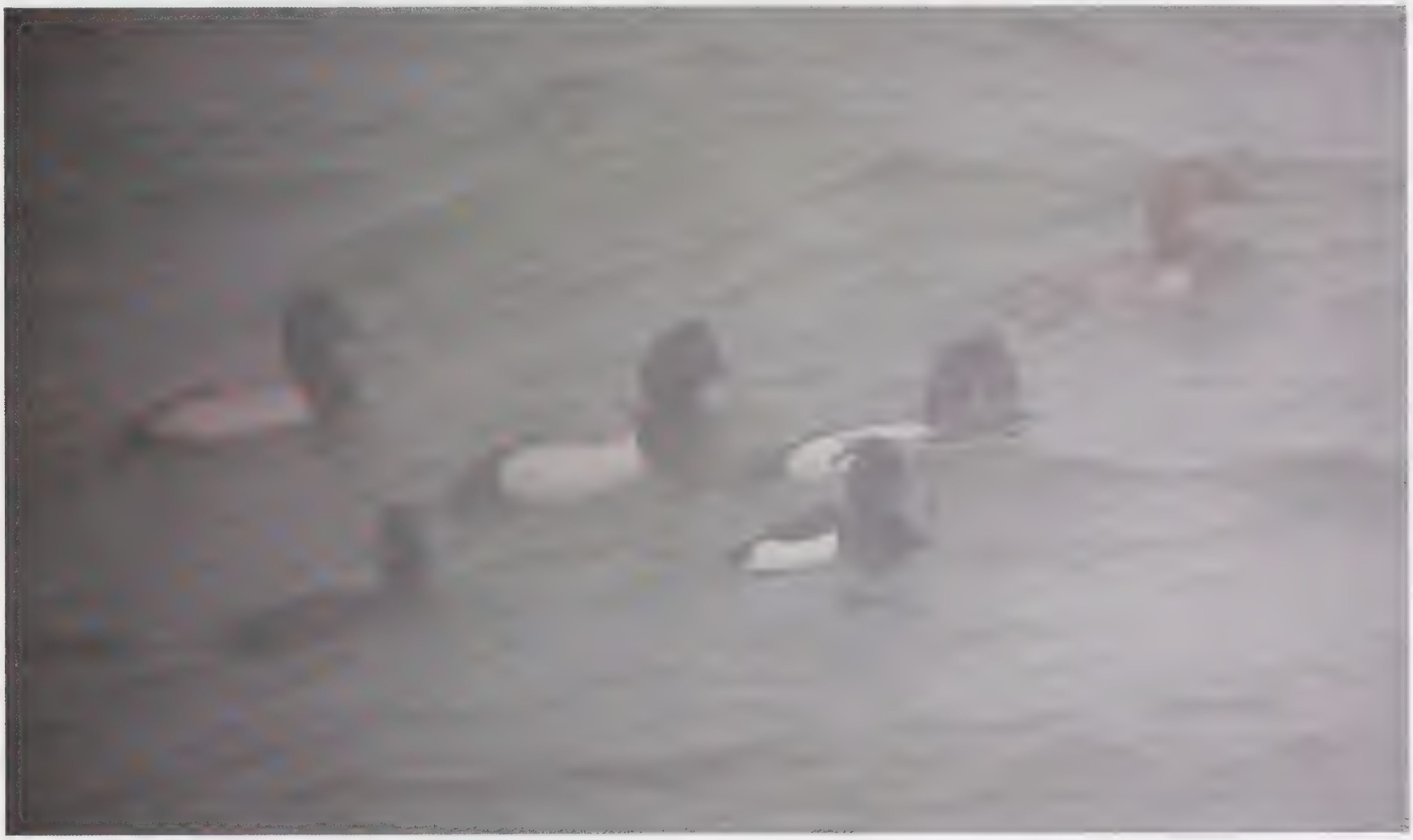
Lining up the camera lens with the scope eyepiece can be difficult at times. If the match is not exact, the photograph will fade to black along the edges, which may still provide a satisfactory image for documenting a rare bird sighting but won't win any photography contests. Some cameras and scopes just don't fit together well. We were lucky that the 19mm lens of the Olympus D-450 matched up so beautifully with the 17mm of our Swarovski 20–60x zoom eyepiece. The diameter of the lens is not the only factor involved. How close you can get the camera lens to the scope eyepiece is important. Some cameras have the actual lens recessed in the lens housing with a flat glass to protect it. These cameras will not allow you to move the camera lens close enough to the scope eyepiece to get a full view with no vignetting. On the other hand, cameras with particularly small or exposed lenses (such as the Canon Elph) can get too close to the scope eyepiece, so you need to move them back and find the optimum position.



The spotting scope and digital camera setup recorded the fine detail of this Northern Flicker's feathers and even the dirt on its bill.

Most digital cameras have autofocus, which may or may not work well with a given spotting scope. It's a good thing that you can do the fine focusing with your scope's focusing ring or knob, because the autofocus image you get with your camera through a spotting scope may not be quite tack sharp at first. The autofocus may hone in on leaves and other distractions rather than your primary subject—the bird.

One complaint I have with many digital cameras (including my own) is the length of time it takes to process an image before it's ready to take another picture. This can be a considerable wait and is extremely annoying when you want to get another quick picture of an interesting bird before it flies away. Recycling times vary with the cameras, the kind of pictures taken (high or low resolution), whether a flash was used, and so on. Some models are better than



Though this picture was taken at high magnification in a snowstorm, it is good enough to confirm the identity of this Tufted Duck, a Eurasian vagrant, swimming with several Greater Scaup and a Canvasback.

others. Our old Olympus D-450 has a buffer that allows us to take four or more shots before the camera has to stop and download pictures. Interestingly, the newer D-460 shortened the actual time required to process a picture, but it dispensed with this useful buffer. The end result is an annoying increase in the time needed between subsequent pictures. Many cameras have "burst" modes that let you take multiple pictures in a quick sequence, but be sure to check the manual. Most of these modes have drawbacks, such as only taking low-resolution pictures or not adjusting for changes in light level. And like most point-and-shoot autofocus cameras, the picture isn't taken the instant you press the shutter release, but only after the camera has determined the correct exposure setting and focus. Although such delays may be acceptable when you're taking static landscapes or portraits, they're frustrating for bird photography, which demands quick reflexes and an equally quick camera response. You can decrease the delay somewhat by holding the shutter release halfway down to activate the autofocus and light meter before you finish composing the picture.

One of the advantages—and perhaps disadvantages—of digital photography is that you can take many, many pictures for very little cost. Winnowing your picture collection down takes enormous self-discipline and time, as does organizing it effectively. We use extended file names and label them with the species name, any age/plumage/behavioral identifiers, the date, and a part of the number assigned originally by the camera—for example, "White-browed Purpletuft juvenile scratching ACEER, Peru 8Jul01 443." We then file the images in folders that represent our interests, such as "Peru trip," "local birds," or "waterfowl."

The system I've described is not perfect. If you're a serious photographer you probably won't be trading in your big telephoto lenses for a spotting scope anytime soon. But for the rest of us, using a pocket digital camera with a spotting scope is fun and easy and adds an exciting new dimension to the birding experience. ■

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The Catbird Seat

IN THE NEW AGE

by Pete Dunne

It wasn't yet time to start the meeting of the Metro Bird Club. Members were studying data on the projector wall, arguing the merits of the most recent proposed changes in the Cottonwood Flycatcher complex (only recently split from Poplar Flycatcher) to be re-split into two new species: Big Tooth Aspen and Quaking Aspen flycatcher.

"When were tissue samples from the type specimens placed in cryogenic suspension?" a club elder wanted to know.

"Only eight hundred years ago."

"Fresh," the elder said, nodding.

"Who did the field work?"

"Two teams—one from Spit and Polish Avian Adventurers, Inc., the other from Twitchers Unlimited."

"Hmmm!" said the club elder. "You can't argue with those credentials."

"Gentlemen," said a cheerful man named Harry, who approached the group with a young girl in tow. "Meet my niece, Elizabeth. She's interested in birds."

"Wonderful!" said the club president. "What field? Harmonic signatures? Reptilian divergence?"

"Identification," she said.

"Ah," the club president intoned. "Care to help us out here?" he said, nodding toward the projector wall. "We're trying to identify this bird."

Elizabeth squinted at the screen. "There's no bird there," she said.

"Of course there is, dear. Right there, in plain numbers and formulas."

Elizabeth turned to her Uncle Harry, wrinkled her nose, and shook her head.

"Elizabeth doesn't identify birds using formulas. She just looks at them."

"Looks at what? Chemical composition? Parasite composition?"

"I see the bird and identify it," she said.

The club members looked mystified.

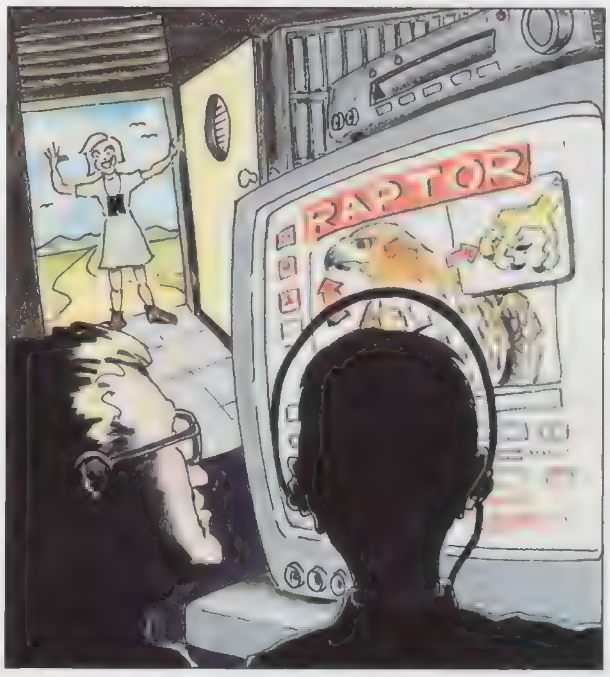
"No kidding," Harry explained. "The kid goes outside and finds a bird. Then she has this formula she's developed that helps her identify it."

"You go outside?" asked the elder.

"Uh huh," said Harry.

"And there are birds out there?"

"I think so. Small feathered creatures that fly. Elizabeth showed me several and identified them using a technique that relies on . . ."



"Key marks," she said, "because they hold the key to the bird's identity."

"Can you give us an example?"

"Well, there's one bird that's real common. It's all dark above and orange below, and it eats worms. Know what it is?" she challenged.

Everyone shrugged.

"It's the rusty-breasted bird."

The group exchanged uncomprehending glances.

"I did a little research," Harry said, "and concluded that a bird that ate primarily worms would have a high percentage of recombinant earthworm proteins in its chemical structure. The likely candidate is a member of the American Robin complex. In the ancient literature there is, in fact, reference to a bird called the 'Robin Redbreast.' How about another bird, Elizabeth."

"Well, there's this real pretty bird that's blue and black and white. Its head is pointy, and it screams *nay, nay, nay* all the time. I call it the 'Blue Nay.'"

"Say," one of the members intoned. "Wasn't there an ancient suborder of corvids called Jay? And wasn't that a phonetic rendition of their vocalization? Jay? Nay? Pretty close."

"Elizabeth," said the club president. "Hundreds of thousands of bird species exist, and many of them are almost identical in their DNA structure. How can you be certain that these two birds are different just by looking at them?"

"'Cause they've got different key marks."

"Hey," a young club member chimed, "you don't suppose that this is how the ancients distinguished birds, do you?" I mean we've always assumed that birding didn't develop until the age of digital recording and computer match-up. But what if humans knew how to identify birds even before the Information Age. What if John James Sibley or Roger Tory Kaufman used a system that employed 'key marks' like Elizabeth here?"

"Gentlemen," said the club president. "If Elizabeth is right, we could be standing on the verge of a revolution in bird study. Imagine being able to go into the field, look at real birds, and identify them using real-time observation and the power of the human mind. Why, it would herald the dawn of a new age. An age of . . . Field Birding!"

"Elizabeth," he continued. "Could you take us outside and show us some birds?"

"The birds are sleeping now," she said.

"But don't they look the same when they're asleep?"

"Yep," she said. "But it's dark, so you can't see them."

The club members exchanged glances. "Oh," they said. ■

ILLUSTRATION BY JEFF SIPPLE

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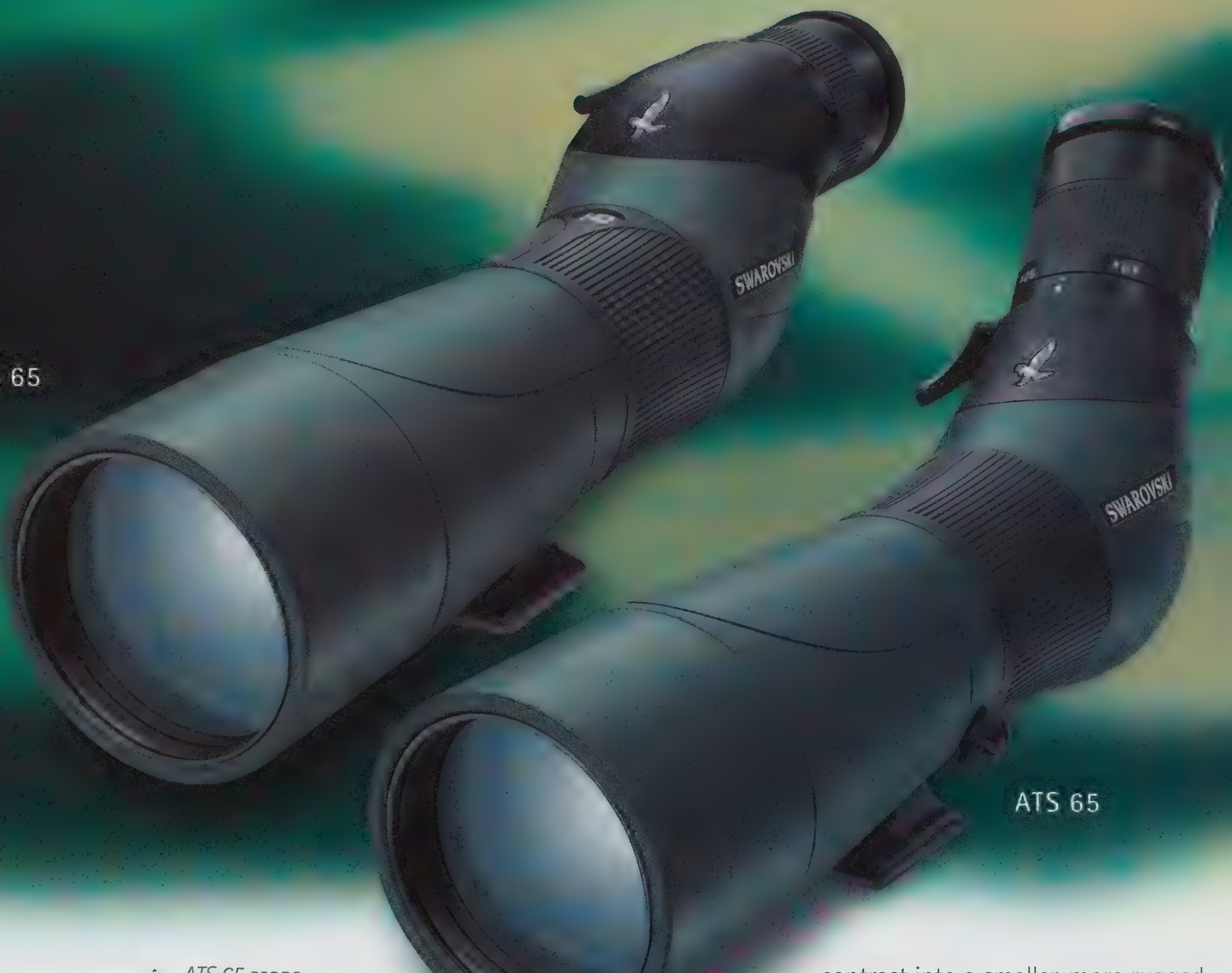

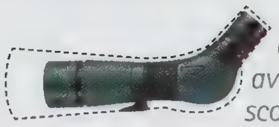

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LIVING BIRD

WINTER 2002 VOLUME 21 NUMBER 1

GREETINGS FROM SAPSUCKER WOODS

This past May, I traveled to tiny Barrow, Alaska—the northernmost "city" in the country. I was there to gather information and take pictures for an article about one of the Lab's research projects (see page 18). Our researchers were not there to study birds, however, but to census migrating bowhead whales, using underwater microphones to identify calling whales and pinpoint their positions.

Working conditions are harsh. The researchers maintain a base camp about five kilometers offshore on the ice. It's a frozen, desolate place, where fierce winds rip across the ice, bringing the wind-chill factor well into the minus-zero category, and where polar bears frequently roam.

I had a few misgivings about publishing this article in *Living Bird.* This is, after all, a bird magazine. But one of the things I've always liked about the Lab of Ornithology is the remarkable breadth of its scope. Our researchers sometimes go well beyond birds, studying the vocal interactions and behaviors of whales, elephants, monkeys, and even insects. But most of this research and the new technologies developed to pursue it have direct applications to bird study. If you have strong feelings pro or con about having a whale article in *Living Bird,* please drop me a line. We're always interested in the opinions of our members.

Tim Gallagher
Editor-in-Chief

10 AUDUBON AT OAKLEY *by Marcia Bonta*
In 1821, John James Audubon was ready to give up his idea of painting all the birds of North America. Then he took a tutoring position in Louisiana and found the inspiration to keep working.

18 THE BOWHEADS OF BARROW *by Tim Gallagher*
Counting whales by sight and sound off the North Slope of Alaska.

26 SCOPING FOR OPTICS *by Kenneth V. Rosenberg*
Searching for the best and brightest spotting scopes for birding.

36 "PIGEON" OF THE PLAINS *by William Burt*
The elegant Franklin's Gull is a fitting emblem of the rolling grasslands and pristine skies of the northern Great Plains.

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The perfect bird.

Cover: This portrait of a Snowy Owl, painted by Louis Agassiz Fuertes in 1909, is part of a frieze that once graced the private library of Frederick Foster Brewster's Connecticut mansion. Brewster later gave all the paintings to the Lab, where for many years they were the focal point of the Fuertes Room. Visiting members and friends will once again be able to enjoy these fabulous works of art when the new Lab opens its doors in 2003.

Right: A researcher counts migrating bowhead whales from a lookout point five kilometers out on the ice off the North Slope of Alaska. See page 18. Photograph by Tim Gallagher.

Back Cover: In this ghostly, pre-September 11 image of a Snowy Owl in flight, the twin towers of the World Trade Center loom softly in the background. Photograph by Frank K. Schleicher.

LIVING BIRD

WINTER 2002 VOLUME 21 NUMBER 1

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Letters

EVOLUTIONARY ISSUES

I am a long-time supporter of nature and environmental preservation, and I am an avid birder. I also support several birding organizations, including the Cornell Lab. I am also a conservative Christian.

I was very disappointed to read Item #1 on your report "2000 in Review." Can you understand how distasteful is the idea of using one-sixth of your total faculty budget to hire an evolutionary biologist?

There are so many issues to address, of highest importance: habitat preservation and restoration, monitoring, education. Am I misunderstanding or completely missing some vital points on the importance of this position? Please help clarify this point.

Marietta J. Kaylor, M.D.
Allegan, Michigan

I very much appreciate your expression of concern about our hiring an evolutionary biologist, and I am also extremely grateful for your long support of the Lab of Ornithology and our mission. Please be assured that Irby Lovette is fully dedicated to habitat preservation, monitoring, education, and the use of science to accomplish real conservation. Indeed, he already has a remarkable track record in these areas for so young a biologist, which is why we hired him.

One of our goals at the Lab is to have faculty members who represent a diversity of subjects in which birds play important scientific roles. Understanding the genetic and behavioral processes by which populations of birds differ from one another turns out to be very important in setting conservation priorities, preserving habitats, and rescuing threatened bird populations. This is what Dr. Lovette studies, using the most modern techniques of DNA sequencing.

We are keenly aware that many committed bird lovers and conservationists also are committed Christians, and that the issue of evolution is a sensitive one for some of these individuals. After developing an understanding of the process of biological evolution, however, many of the most devout Christians comfortably recognize that it need not present any threat in matters of faith. Evolution simply refers to the well-documented fact that populations separated from one another can gradually become different—behaviorally, structurally, and genetically—as a result of different conditions in their respective environments. This occurs because many traits are passed from parent to offspring, and certain traits are better than others at allowing the individual to survive or reproduce in a given environment.

The process by which this gradual differentiation takes place is becoming much better understood now that we can directly examine the underlying genetics by means of DNA sequencing. Hence, the field of evolutionary biology is opening important new doors for our understanding of variation and adaptation in nature, a subject that has vital significance in conservation.

I respect your beliefs, and I certainly agree with your assessment that habitat protection, monitoring, and education are of utmost priority. I am proud of the Lab's accomplishments in these areas, but we have much, much more work ahead of us. Even if we may disagree about the importance of evolution, I hope that you don't lose faith in our ability to make a real difference for birds and their habitats. Again, many thanks for contacting us with your concerns.

John W. Fitzpatrick
Louis Agassiz Fuertes Director
Cornell Laboratory of Ornithology

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

BirdNews

In Memoriam: Frank Cooper Craighead, Jr.

(1916–2001)

Famed biologist and conservationist Frank Craighead, Jr., passed away on October 21, 2001, after a long battle with Parkinson's disease. He was 85 years old.

Frank and his twin brother John are among 15 people who were honored by the National Geographic Society for their distinguished contributions to humanity, and they were also included in *Audubon* magazine's list of 100 champions of conservation who shaped the environmental movement in the 20th century.

Although they are perhaps best known for their 12-year study of grizzly bears in the Yellowstone National Park area, the Craigheads began their scientific careers as ornithologists. Their 1956 book, *Hawks, Owls, and Wildlife,* was a seminal work in the field of raptor ecology, examining the intricate relationship between predatory birds and their prey.

Frank Craighead with a "Shaheen" (a race of Peregrine Falcon) during his 1940 stay in India.

But Frank and John were studying, photographing, and writing articles about raptors long before they became professional biologists. While still in their teens, they were audacious enough to walk into the editorial offices of *National Geographic* magazine and pitch an article idea about their experiences studying raptors—and the editor bought it. This 1937 article, "Adventures with Birds of Prey," eventually led to the publication of their first book, *Hawks in the Hand.*

An Indian prince who had read their article invited them to visit and see his trained falcons. Their experiences there, during the final days of the rule of the maharajahs, were recorded in a 1940 *National Geographic* article, "Life with an Indian Prince," and a book of the same title, recently published by The Peregrine Fund.

The Craigheads began their grizzly bear study in 1959. They were the first researchers to attach radio collars to wild animals—a technique that has revolutionized the study of wildlife. According to many biologists, their research helped save the grizzly from being extirpated in the Lower 48 states and brought the importance of ecosystem preservation to the forefront of conservation efforts.

Frank Craighead is survived by his wife, Shirley; his sons, Lance and Charlie; his daughter, Jana Smith; his brother, John; and his sister, children's book author Jean Craighead George.

A New Library at the Lab of Ornithology

A prominent feature of the new Lab will be a first-rate library. It will be a haven for students, friends, and faculty, with easy access to the entire collection, study areas, private carrels, and work tables. Thanks to four recent gifts and commitments, the library is sure to be one of the finest ornithological collections in the world.

First, Ellen Adelson of Tulsa, Oklahoma, made a generous commitment to fund the design and construction of the new library. Accordingly, it will be called the Adelson Library, a tribute to the Adelson family and to Ellen's dedication to birds and the Lab of Ornithology.

Second, William E. (Ted) Davis of Foxboro, Massachusetts, donated an expansive collection of books and journals to the Lab this past April. Ted and his father had amassed a remarkable personal ornithological library. The Davis Collection, about 8,000 publications, will be combined with existing Lab library holdings to make a world-class collection.

Third, Lab board member and friend, Mary P. Hines of Winnetka, Illinois, arranged a gift to subsidize the enormous cost of sorting, cataloging, and amalgamating all Lab library holdings. Mary's gift will ready the collections so that on opening day in 2003, all of the books and journals will be ready to use.

And finally, a bequest from Bertha and Gladys Andrew of Trumansburg, New York, recently established the Andrew Library Endowment. These sisters, both Cornell graduates, were lifelong bird watchers and friends of the Lab. Their endowment will provide annual revenues for book and journal acquisitions.

Such remarkable generosity has been characteristic of this project—friends working together to build a new library, a new Lab, and a new tomorrow, all for the birds.

CONVERGENCE AT MOTT'S CREEK

by Jack Connor

Can an owl become a hawk?

Remember, everyone, we will be meeting this Saturday morning before dawn at Mott's Creek on the Mullica River estuary, and you need to be dressed for cold and exposure: hat, gloves, boots, heavy socks, hooded jacket. My advice is that you stop first at the Wawa on Route 9 in Smithville and buy yourself a 20-ounce cup of coffee and a 12-pack of chocolate donuts. Any donuts you don't eat you can share with the rest of us. If the wind is blowing on the estuary the way it does most winter days, we'll need them.

Head north from the Wawa one mile, turn right, and follow Route 657 east along Wigwam Creek, which flows into Mott's Creek as the woods end and the salt marsh opens up. For a quick lesson in owl ecology, you should pull over at the edge of the woods, turn off your engine, and listen for a few moments. Both Great Horned Owls and Eastern Screech-Owls call in winter in that forest, so you may hear one or the other behind you, off in the distance. Those trees mark the boundary of both species' normal territories, however. Like all conventional owls, they rarely venture out onto the salt marsh—or remain active after dawn.

Don't linger long. For your best chance to see an unconventional owl—one of the most hawklike members of its order—you need to be down at the end of the road and standing on the Mott's Creek Inn deck at first light, as dawn breaks. That's when the Short-eared Owls fly most reliably, and we should be able to watch them hunt for an hour or more, until the sun has fully risen and they are joined by the most owllike of all North American hawks, the Northern Harrier. If we are lucky, we may even witness an aerial dogfight between the two species. Each apparently sees the other as a rival, and they chase each other regularly.

Our theme for the field trip will be convergent evolution, a topic Charles Darwin seems to have avoided in his 1859 edition of *The Origin of Species.* And he may have had good reason. Darwinian evolution explains how two closely related populations of the same species can develop in different directions under changing circumstances, given enough time. Convergent evolution explains how, given enough time, unrelated species can grow similar to each other. I can't help wondering if Darwin deliberately chose not to mention the subject. *Origin* has more than enough new and strange ideas—why confuse readers with still another one? (He does discuss convergence, briefly, in *The Descent of Man,* published in 1871.)

Linnaeus and the other pre-Darwinian systematists grouped living organisms by "Unity of Type," noting that the Designer had repeated Himself frequently—giving all whales and dolphins, for example, lungs for breathing and similar-looking blowholes high on their heads. Linnaeus took for granted that these and other shared

RICHARD DAY/DAYBREAK IMAGERY

ARTHUR MORRIS/BIRDS AS ART

Northern Harriers (above) look and act more like Short-eared Owls (facing page) than they do other hawks, and short-ears behave more like harriers than they do other owls, but they aren't closely related—are they?

features had been created independently (when whales, dolphins, and all other living creatures were created) and demonstrated nothing more than God's understanding of good design.

Darwin had a different interpretation. "On my theory," he writes in *Origin,* "Unity of Type is explained by Unity of Descent." Whales and dolphins share features not because God had repeated Himself again and again, but because whales and dolphins share a common ancestor. "The natural system," Darwin argues, "is a genealogical arrangement."

In the final pages of *Origin of Species* Darwin predicts "the considerable revolution in natural history" that would come about should his theory become "generally admitted." Among other developments, systematics would become an entirely new science: "A grand and almost untrodden field of inquiry will be opened, on the causes and laws of variation. . . . Our classifications will come to be, as far as they can be made, genealogies." And he was right, as he was about nearly everything in his revolutionary book. Ever since Darwin, taxonomy has been an investigation into ancestry. When taxonomists describe the shared features in two related groups, they are sketching those two groups' common ancestor. Whales and dolphins must share a single ancestor, we know; the similarities between them are too numerous to be accidental. By the same logic, the more similarities we find between two species, the more recent must be their common ancestor.

But wait—spend a morning with the raptors of Mott's Creek, and you will see that systematics and genealogy are not always so easy. Harriers look and act more like Short-eared Owls than they do other hawks, and short-ears behave more like harriers than they do other owls, but they aren't closely related—are they?

Linnaeus grouped all hawks and owls together in the order Accipitridae, the birds of prey, by their Unity of Type. Among other similarities, hawks and owls share large heads, big eyes, binocular vision, tearing bills, muscular torsos, sharp talons, and killing feet. The last two features seem especially telling; virtually all other birds in the world, except hawks and owls, use their bills to capture and subdue their prey and use their feet only for walking or swimming.

But a more careful look at the two groups reveals some crucial differences. Thomas Huxley, one of Darwin's most adamant supporters, was among the first to argue that the similarities are more apparent than real. Unlike hawks, owls specialize in nocturnal hunting and have developed several adaptations to enable them to track and capture prey in the dark. The most obvious is the facial disk, the sound-collecting instrument of small, tightly packed feathers around the eyes that directs aural signals to the ears. Another is the asymmetry in the ears: owls' two ear openings are arranged at slightly different positions on their

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skulls to enable them to pinpoint sounds with extra precision. Owl eyes are also different from hawk eyes: they are proportionately larger with more rods than cones, so owls see better than hawks in low light but not nearly as well in daylight.

After more than a century of debate, contemporary systematists seem to agree with Huxley (and recent DNA studies seem to corroborate) that owls and hawks are not closely related. Their similarities have been created by convergent evolution.

Which brings us back again to Mott's Creek. Short-eared Owls and harriers seem so similar that either could accuse the other of ecological plagiarism. They occupy the same open, treeless habitats, feed on the same prey (voles and mice), and seem to use nearly identical foraging methods. Both species course low over the grasses, apparently depending on both their ears and their eyes to detect the rodents below. Both drop into vegetation and pluck out prey that are concealed and safe from other raptors.

The harrier obviously uses its ears more than other hawks: it has a facial disk that collects sounds just like an owl's, and research has shown that it can locate prey by acoustic cues alone. I have not been able to find any information on the ratio of cones and rods in the eyes of a Short-eared Owl, but these birds often remain active into the brightest parts of the day. Clearly, they are more skilled in daytime hunting than conventional owls. An even more evident hawklike feature is their flying ability. Most owls—Great Horned, screech-, Barred, Long-eared, Spotted, Great Gray, and the majority of other owls worldwide—are perch-and-pounce predators with limited flying abilities. The short-ear, by contrast, spends most of its foraging time in the air, cruising in low patrol, just like a harrier, hovering much like a harrier, and dropping on its prey, just like a harrier. The short-ear's flying abilities can also be demonstrated by a glance at a map of its worldwide range. Darwin saw the endemic population of Short-eared Owls on the Galápagos Islands, descendants of short-ears that (apparently) wandered to the archipelago after a 600-mile flight from South America. That flight was a quick skip for the Short-eared Owl, however; the species has also colonized the Hawaiian Islands, more than 2,000 miles from the nearest continent. Of all the world's raptors, only three—Barn Owl, Peregrine Falcon, and Osprey—have oceanic distributions that compare with the short-ear's.

"Could the Short-eared Owl eventually become a hawk?" a student once asked me at Mott's Creek. "If it and the harrier keep growing closer and closer for another million years, could they eventually merge into one species?" We had been talking a few minutes earlier about Black Ducks and Mallards, two "species" so closely related that they hybridize regularly, but theirs is more a case of divergence from a common ancestor than the convergence of two unrelated species. So the answer is no, the owl can't become a hawk, or the hawk an owl. Their genetics would never allow it.

We have to wonder, though: how do these two species partition the resources? The Rule of 4 Cs—"Complete Competitors Cannot Coexist"—is generally applied to the closest of relatives: the three North American mergansers, the two North American night-herons, the *Dendroica* warblers of New England, and so on. In each of those cases, each species' specialty is slightly different from the others', though they share recent common ancestors. If their ecologies did not differ, they would not be able to live in the same habitats. One relative would drive out the others by outcompeting them. In the odd case of the Northern Harrier and the Short-eared Owl, convergent evolution has drawn two nonrelatives into what seems to be a very close and competitive coexistence. Why doesn't one drive off the other into a different niche? How does the short-ear hold its own against the harrier? Could it be that slight differences in preferred foraging times provide enough separation for them to coexist?

I am hoping that this puzzle will help keep you warm at Mott's Creek this Saturday—or at any other area you visit where these two raptors fly. Let me know what you decide. ■

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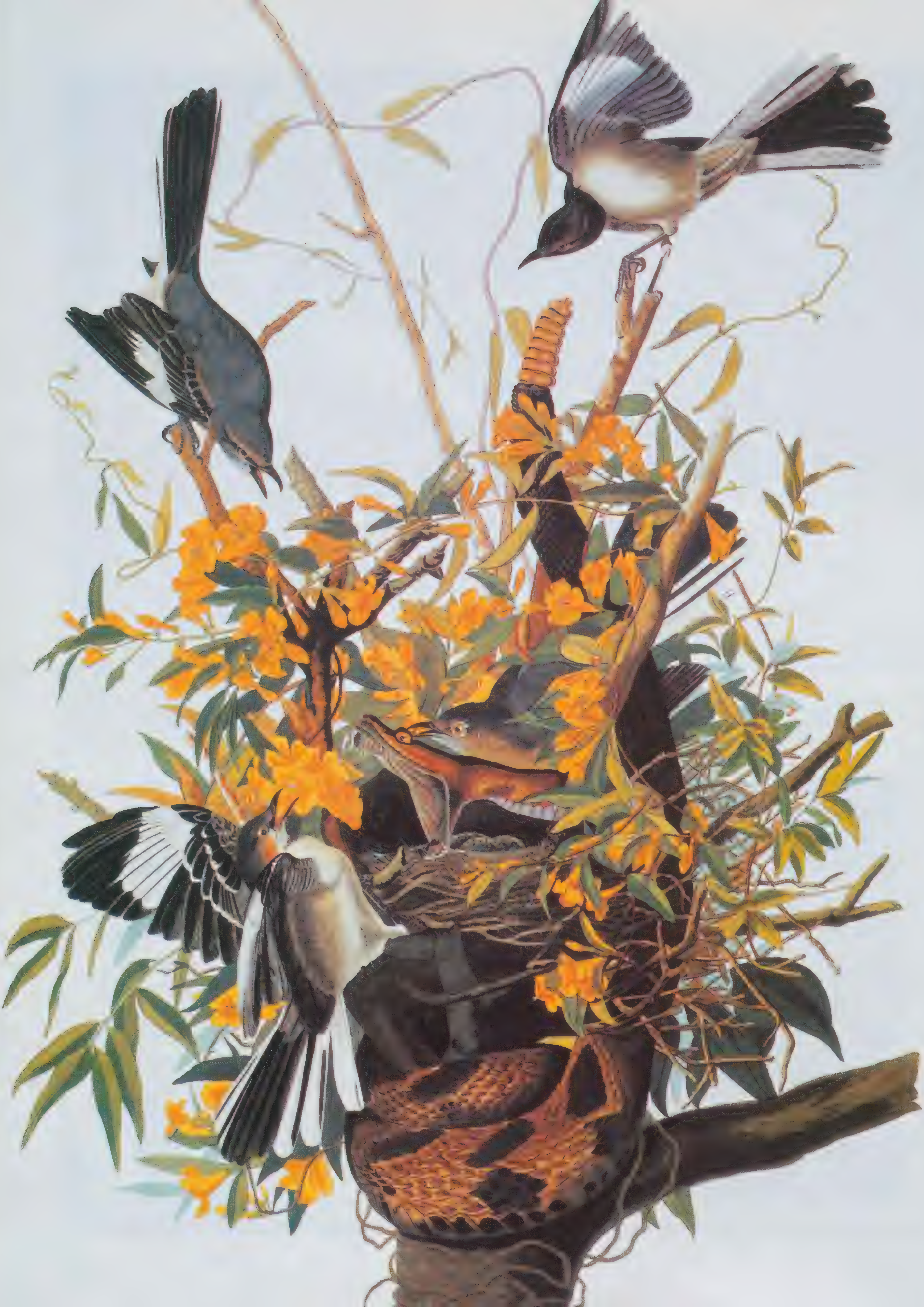


AUDUBON AT OAKLEY

BY MARCIA BONTA

In 1821, John James Audubon was ready to give up his idea of painting all the birds of North America. Then he took a tutoring position at Oakley Plantation and found the inspiration he needed to keep working.

A hundred and eighty years after John James Audubon arrived at Oakley Plantation in Louisiana, the forested grounds still reverberate with birdsong. Northern Cardinals (Audubon's "Cardinal Gros Beaks"), Acadian Flycatchers ("Small Green Crested Flycatchers"), Northern Parulas ("Blue Yellow Back Warblers"), and Wood Thrushes, which Audubon claimed were his "greatest favorite of our feathered tribes," sang and called around us. But the most abundant bird of all when my husband and I visited was the Northern Mockingbird, "extremely plenty" also in Audubon's day. Even in the heat of noonday the mockingbirds sang. "There is probably no bird in the world that possesses all the musical qualifications of this king of song," wrote Audubon.

It was at Oakley on August 25, 1821, that Audubon "Finished drawing a very fine Specimen of a Rattle Snake" after 16 hours of work and later added it to one of his most controversial paintings—two pairs of mockingbirds defending a nestful of eggs from a rattlesnake, with its mouth agape, showing its outward-curved fangs.

Audubon arrived at Oakley in mid-June, depressed by his failure to earn enough money

Oakley House (above) has been carefully restored in the style of the late Federal Period—the time when Audubon stayed there. It is now part of a state historical park. Audubon's painting of Northern Mockingbirds defending a nest against a rattlesnake was at first criticized as being unrealistic because, his detractors claimed, rattlesnakes cannot climb trees. They were eventually proven wrong.

Bruce Bonta (right); Audubon illustration courtesy Rare & Manuscript Collections, Kroch Library, Cornell University

by portrait painting and teaching in New Orleans to support his bird painting. He also missed his wife Lucy and their two boys, whom he had left in Kentucky, hoping to send for them as soon as he found lucrative work.

He had been ready to give up his great plan to paint all the birds of North America before Lucretia Alston Pirrie of Oakley Plantation approached him with a job offer. She said she would provide free room and board for Audubon and his young assistant, Joseph Mason, and pay Audubon sixty dollars a month to spend half of each day teaching drawing, music, dancing, and arithmetic to her 15-year-old daughter, Eliza. The rest of the time he would be free to pursue his own work.

Audubon and Mason took a steamboat 125 miles northwest on the Mississippi River to Bayou Sarah, then the most important cotton port between New Orleans and Memphis, Tennessee. From Bayou Sarah on the flat delta, they walked slowly uphill to St. Francisville and then on to Oakley. "The Hilly ground, even the Red Clay I looked at with amazement such entire change in so Short a time appears often supernatural, and surrounded once More by thousands of Warblers and Thrushes, I enjoyd Nature," Audubon wrote in his journal. Both Mississippi and Swallow-tailed kites appeared overhead, almost like good luck omens.

Here, in Feliciana Parish, the "happy country, the noble forests of lower Louisiana," Audubon matured as an artist. Between 1821 and 1829, he spent about two years in the parish, beginning with his four months at Oakley, where he produced one painting after another, averaging about one every three days.

He also discovered at least four previously unknown bird species, "non-descripts" as he called them—Bewick's Wren, Rough-winged Swallow, Carolina Chickadee, and Louisiana Waterthrush. He thought he had found even more, but all of his new warbler and flycatcher species turned out to be female or immature warblers. The Bonaparte's flycatcher was an immature Canada Warbler. The Roscoe's warbler was an immature Common Yellowthroat. The Selby's flycatcher was an immature Hooded Warbler, as was the cypress swamp flycatcher. And the Louisiana warbler, Children's warbler, and Rathbone warbler were all immature or female Yellow Warblers.

With its period furniture, a raccoon pelt flung over a chair back, and an early shotgun lying on the bed, the room below looks just as it might have in the early 19th century when Audubon stayed at Oakley.

ALEX DEMYAN (2)

But it is easy to forgive such mistakes. Audubon had no reference works to guide him, except for the frequently inaccurate paintings of Alexander Wilson, whose errors Audubon eagerly pointed out in his journal.

In and around the 3,200-acre Oakley Plantation and at nearby lakes, swamps, and creeks, Audubon saw the now-extinct Carolina Parakeet and Ivory-billed Woodpecker, as well as the Swallow-tailed Kite, Red-cockaded Woodpecker, White Ibis, and Wood Stork. He painted three of them that first summer at Oakley—the Swallow-tailed Kite grasping a coiled garter snake, three Red-cockaded Woodpeckers on a bare tree trunk, and Carolina Parakeets feeding on the seeds of cockleburs. The others he observed and then painted later, just as he did with the mockingbird painting he finished in 1825 at Beech Woods, another local plantation. But in his Mississippi River Journal of 1820-21, one of his few surviving journals, he recorded seeing several pairs of Ivory-billed Woodpeckers and shooting a handsome male. He also spent a night hunting Wood Storks.

Still, he didn't kill all the birds he studied and painted. Once at a lake he "Saw a White Ibis on a Log where it sat a Long time arranging its feathers using its scythe Shaped bill very dexterously; Could have Killed it but having No boat and afraid of Sending a Dog in the Lake Left it Setting peaceably."

On July 21, 1821, he shot several Red-cockaded Woodpeckers during a walk in the pine woods. Two males were only slightly wounded in the wing so he put them on his head under his hat, where they remained "still and stubborn," one dying en route to the house. The other he put in a cage. That one escaped almost immediately, using his bill to chisel his way out to the floor. Then he climbed up the wall, "picking between the Bricks and Swallowing every Insect he found—remarking often his looking under Craks and the litle Shelves in the rough wall, I drew him in that position." After he finished, he released the energetic woodpecker.

Although Audubon was handy with his gun, a virtual necessity for wildlife illustrators before the days of high-powered binoculars and cameras, he was also a dedicated naturalist. Both the English naturalist Charles Waterton and George Ord, the publisher of Alexander Wilson's work, attacked Audubon for his supposedly inaccurate portrayal of rattlesnakes in his mockingbird painting. It turned out, though, that Audubon was right and his critics were wrong. Rattlesnakes can climb trees and their fangs do point outward.

Audubon not only painted birds, he studied their habits and habitats. In the case of the Red-cockaded Woodpeckers, he examined their crops to see what they ate, described their calls, and observed that "Tall pine trees are its chosen haunts and seldom does it alight on any other Kind of Timber—its Motions are quick, gracefull and easy, its Move in all directions either on the Trunk or Limbs, Looking often very cunningly under the Loose pieces of bark for Insects: is more Shy than any of its Genus."

Audubon bird prints, many of them first editions from his Double Elephant Portfolio, adorn every wall in the house. Most of them were painted in his beloved Louisiana.

When a Choctaw Indian brought him a dead, female Chuck-will's-widow, Audubon carefully measured it and remarked that the bird's crop was filled with many pinching bugs, which he meticulously described. He also observed the way the species flew—"Lightly in the manner of the Night Hawk but Close to the Cotton plant tops, passing and repassing by me untill I could see No more."

Audubon seemed to have compassion for some of the birds he captured. After finding 17 Orchard Oriole nests at Oakley during two days, he put one male in a cage. But he released him five days later, "seing that the Departure of every number of his tribe, had rendered him melancholy to excess."

On an expedition to a cypress swamp surrounding the aptly named Alligator Lake, inhabited by "several Large Alligators Sluggishly

ALEX DEMYAN

The grounds at Oakley are beautiful, with picturesque gardens and stately trees draped with Spanish moss—a fitting area for Audubon to wander, seeking inspiration and new birds to paint. Roger Tory Peterson called this painting of Red-shouldered Hawks (facing page) one of Audubon's "finer portraits."

Moving on the Surface, Not in the Least disturbed by our Approach," he saw many Prothonotary, Yellow-throated, Canada, and Cerulean warblers. He shot a male Yellow-throated Warbler and a male Cerulean Warbler, and, he wrote, "having as much as I know I could Well draw before they would be Spoiled by the heat of the Wheather returned to the House."

Altogether he painted at least 12 species of warblers (Canada, Hooded, Prairie, Common Yellowthroat, Yellow, Cerulean, Yellow-throated, Pine, Tennessee, Magnolia, Louisiana Waterthrush, and American Redstart) as well as three species of woodpeckers (Red-cockaded, Downy, and Red-headed) at Oakley. Other paintings that he labeled and dated at Oakley include Summer Tanager, Mississippi Kite, Yellow-throated Vireo, Northern Cardinal, Bewick's Wren, and Red-shouldered Hawks in a hickory tree, which legendary bird artist Roger Tory Peterson said was one of Audubon's "finer portraits."

His first three months at Oakley were idyllic, but then Eliza, the only surviving child of Lucretia and James Pirrie, became ill. Her doctor forbade Audubon to teach her, and he was dismissed on October 10. But he asked for and received an extension until the 21st so that he could continue "My Close Application to my Ornithology Writing every day from Morning untill Night, Correcting, arranging from my Scattered Notes All My Ideas and posted up partially all My Land Birds." During that grace period, he also painted the Tennessee and Magnolia warblers.

The ladies, including Lucretia's daughter from her first marriage, treated Audubon coolly, probably, in part, because he tried to charge Lucretia for the 10 days that Eliza was too ill to be taught. But James Pirrie and the husband of Lucretia's older daughter continued to be cordial, and Pirrie even apologized for his wife's behavior. So although Audubon left "this abode of unfortunate Opulence without a single Sigh of regret—Not so with the sweet Woods around us, to leave them was painfull . . . Looked With Pleasure and sorrow on the few Virgin blooming magnolias."

In late May, when my husband and I visit, the air is still scented with a few magnolia blossoms, but the woods surrounding Oakley, pulsating with cicadas, are not as extensive as they had been in Audubon's day. Now part of Audubon State Historic Site, the restored plantation house and outbuildings are set amid a 100-acre forest of loblolly pines, red, water, and live oaks, and sweetgum with an understory of Carolina laurel cherry, flowering dogwood, yaupon holly, wild hydrangea, and French-mulberry. Audubon perched his immature Cerulean Warbler in French-mulberry, and his Yellow-throated Vireo sits in wild hydrangea, head up, trying to catch an insect.

As we wander through the forest on the circular Cardinal Trail, many of the birds we hear are those that Audubon declared were "extremely plenty" in his journal: Red-bellied Woodpeckers, Acadian Flycatchers, Carolina Chickadees, Northern Mockingbirds, Great-crested Flycatchers, Wood Thrushes, Carolina Wrens, and Northern Cardinals. Less plentiful but also present during Audubon's time are Cedar Waxwings, Brown Thrashers, Chimney Swifts, Blue Jays, Eastern Towhees, and Pileated Woodpeckers.

Courtesy Rare & Manuscript Collections, Kroch Library, Cornell University

VISITOR INFORMATION

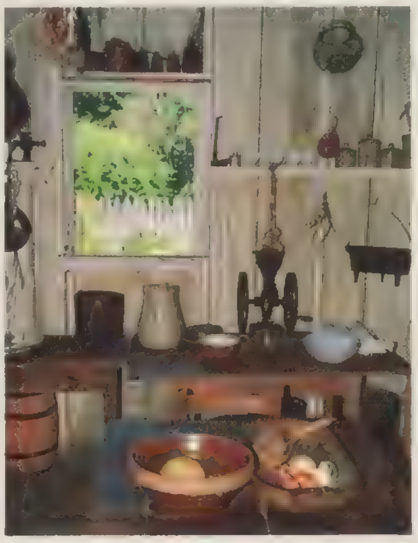
ALEX DEMYAN (3)

This cabin is one of two that served as slave quarters at Oakley Plantation before the Civil War. A stunning white Peacock (above right) often patrols the wooded picnic area at the site.

Audubon State Historic Site—which includes Oakley House, other historic plantation buildings, and 100 acres of woods—is located near St. Francisville in West Feliciana Parish. From Baton Rouge (a 30-minute drive away) follow US 61 north to LA 965, then turn right and follow the signs. The site is open daily, year-round, except for Thanksgiving, Christmas, and New Year's Day. Admission is $2.00. Oakley House, two former slave cabins, a large detached kitchen, and the grounds are open to visitors, and guided tours are available. For more information, call (225) 635-3739 or send e-mail to <audubon@crt.state.la.us>.

The nearby Tunica Hills Wildlife Management Area features hiking, wildlife viewing, and birding on 3,366 acres of hills, bluffs, and ravines. This area is one of the richest in the country in terms of biodiversity.

St. Francisville is a treasure of historic houses and churches. Several of these houses are bed-and-breakfast establishments, and motels and lodges are available in the nearby countryside. Every third weekend in March, the Audubon Pilgrimage takes place, featuring historical tours of private homes conducted by costumed guides, rural homestead demonstrations, and related events. For more information, call the West Feliciana Historical Society (225) 635-6360, or visit the web site at <audubonpilgrimage.com>. The group will also send brochures about other historical plantations, accommodations, and restaurants in the area. Be sure to request a "Birds of the Felicianas" checklist.



The State of Louisiana purchased Oakley from Eliza Pirrie's granddaughter, Lucy Matthews, in the mid-twentieth century, with the proviso that it would be preserved as a state historical property. Oakley was a near wreck at that time, with the walls, ceilings, and furnishings badly decayed. It was carefully restored in the late Federal period style, to look as it did when Audubon stayed there. Framed by huge live oaks draped in Spanish moss, the tall, airy house is dominated by two jalousied porches, which allow air to circulate through the house but keep out sun and rain.

The rooms feature first-edition Audubon prints, such as the mockingbird masterpiece in the dining room and the Carolina Parakeets in a room decorated as if Audubon had just left it, complete with a bird cage and a raccoon pelt flung over a chair. The guest bedroom, its bed swathed in mosquito netting, includes prints of the Yellow-throated Vireo and Pine Warbler. Dozens of other Audubon prints, most of them painted in his beloved Louisiana, adorn every wall in the house.

If Audubon had not been invited to Oakley, he might never have discovered what was then and is still today an area rich in bird life, from its upland forests to the floodplain of the Mississippi River. According to Louisiana author Stanley Clisby Arthur, Audubon made at least 167 bird paintings in Louisiana and probably many more. It was his "ornithological mecca," Arthur says.

"The State of Louisiana has always been my favourite part of the Union," Audubon wrote in his *Ornithological Biography of the Great Blue Heron.* About the Louisiana Waterthrush he wrote, "I take the liberty of naming this leading songster of our groves after the State which has afforded me my greatest pleasures." This was but one of the many birds that Audubon discovered, painted, and named at Oakley Plantation. ■

Marcia Bonta is a freelance writer specializing in nature and outdoor subjects.

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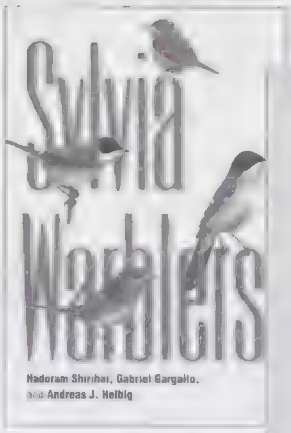

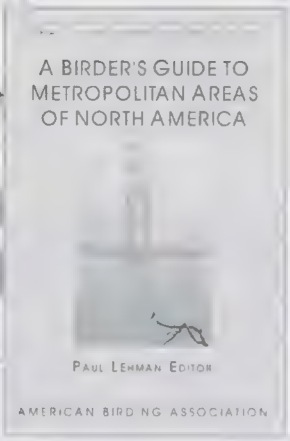
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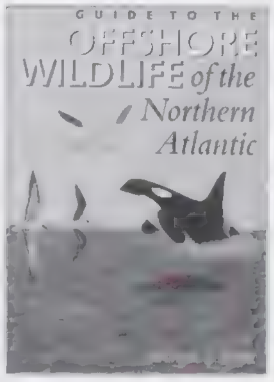

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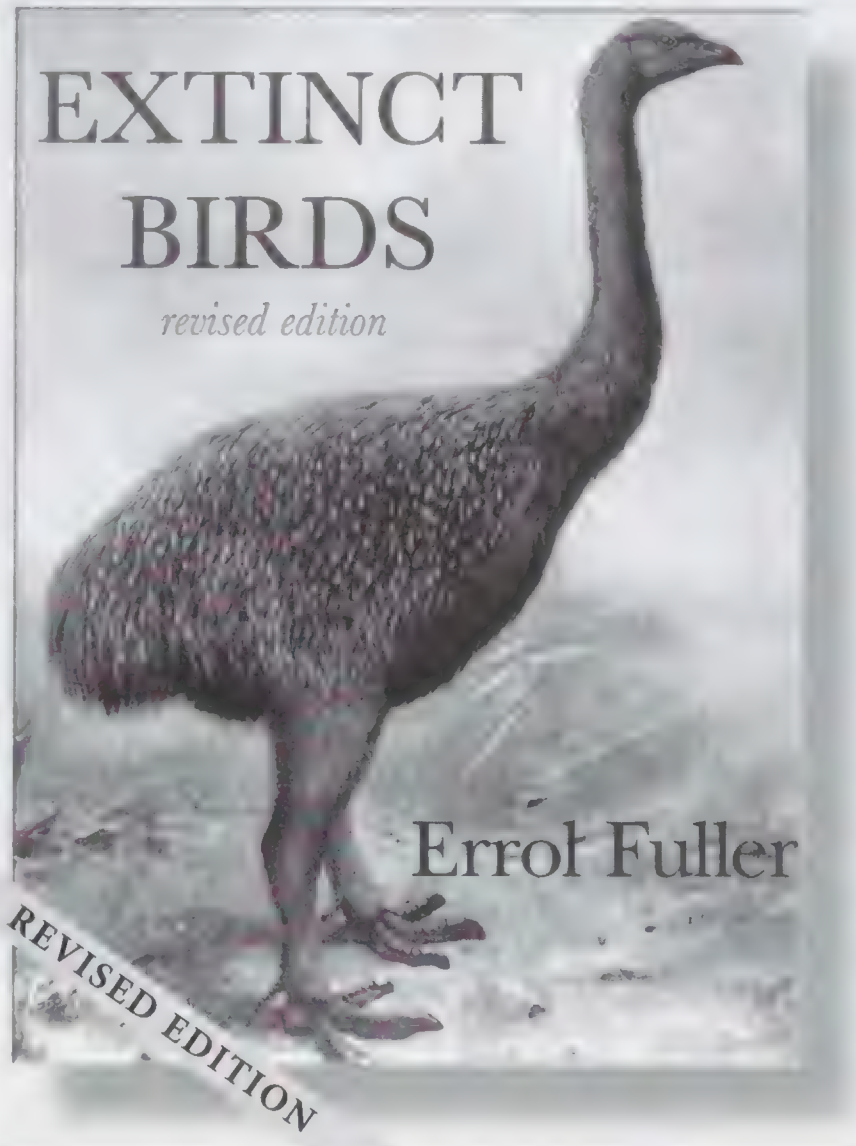

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THE BOWHEADS *of* BARROW

An Inupiat hunter tows a traditional sealskin whaling boat across the ice off northern Alaska. Interesting juxtapositions between ancient and modern technologies are a common sight here, where the indigenous people have hunted the bowhead whale for more than 2,000 years.

TEXT AND PHOTOGRAPHS BY TIM GALLAGHER

Counting whales by sight and sound off the North Slope of Alaska

I remember thinking as I changed planes in Fairbanks, Alaska, last April: this won't be too bad. Sure, the ponds and small lakes are still frozen and the temperature's hovering in the low 30s, but it's not bitterly cold, and there's no snow on the ground. How much worse could it be in Barrow, just a few hundred miles farther north? I found out a short time later as our plane bucked and strained, buffeted by a howling headwind as it flew ever northward into leaden, zero-visibility skies.

"Good morning. This is your captain speaking," a voice crackled over the intercom. "The temperature in Barrow is zero degrees Fahrenheit, with thirty-mile-per-hour winds blowing steadily from the northwest."

He wasn't lying. Half an hour later as I stepped from the plane, an arctic blast slammed into me, blowing snow sideways. I could barely see the white steel building that served as the community airport. So I was back in the High Arctic for the third year in a row. This time I had come, not to study birds, but to help census bowhead whales with Christopher Clark, director of the Lab of Ornithology's Bioacoustics Research Program (BRP).

Okay, at this point I know you're wondering what studying whales has to do with an ornithological research institution (or its magazine). Actually, in some ways, plenty. Although whales "sing" in low, powerful tones (some below the range of human hearing) that reverberate across hundreds of miles of ocean, remarkable similarities exist between birds and whales—and elephants, frogs, toads, and insects—in the purposes of their vocalizations and our methods of studying them. Researching the vocal behaviors of these animals can teach us a lot about birds. And most of the techniques and technologies developed by BRP to study whales and elephants have proven to be directly applicable to bird study. For example, the Lab has been experimenting for several years with "pattern recognition" software that automatically picks out the calls of night-migrating songbirds and identifies the species; BRP initially designed this software to identify whales as they vocalize across vast expanses of ocean.

The Bioacoustics Research Program has long pioneered the idea of using sound to monitor and census animals in places where other monitoring techniques would be difficult or impossible to use. Lab researchers are currently using microphone arrays in Africa to census elephants in heavily forested areas where accurate visual counts are virtually impossible. (Researchers formerly had to walk through the jungle, counting fresh elephant dung piles to estimate the number of animals.) By setting up an array of microphones, scattered strategically across an area, the same vocalizing animals are recorded simultaneously from several different angles and distances. Through triangulation and by determining the slight difference in time (in milliseconds) it takes for the sound to reach each microphone, researchers can determine each animal's position and get an idea how many are present.

The same thing is done to census whales, except that the underwater microphones (called hydrophones) are dropped through holes bored in the ice and suspended two or three meters deep in the frigid Arctic water. BRP has five hydrophones placed about a kilometer apart at the edge of the lead—an open-water area at the edge of the ice, nearly five kilometers offshore. Twenty-four hours a day, a bioacoustics researcher sits in a small, centrally located shack (nicknamed the "Sled Shed"), monitoring a computer screen that shows five streaming bands of sonograms—one from each hydrophone—in real time, as the sounds play in the background. Sonograms are visual repre-

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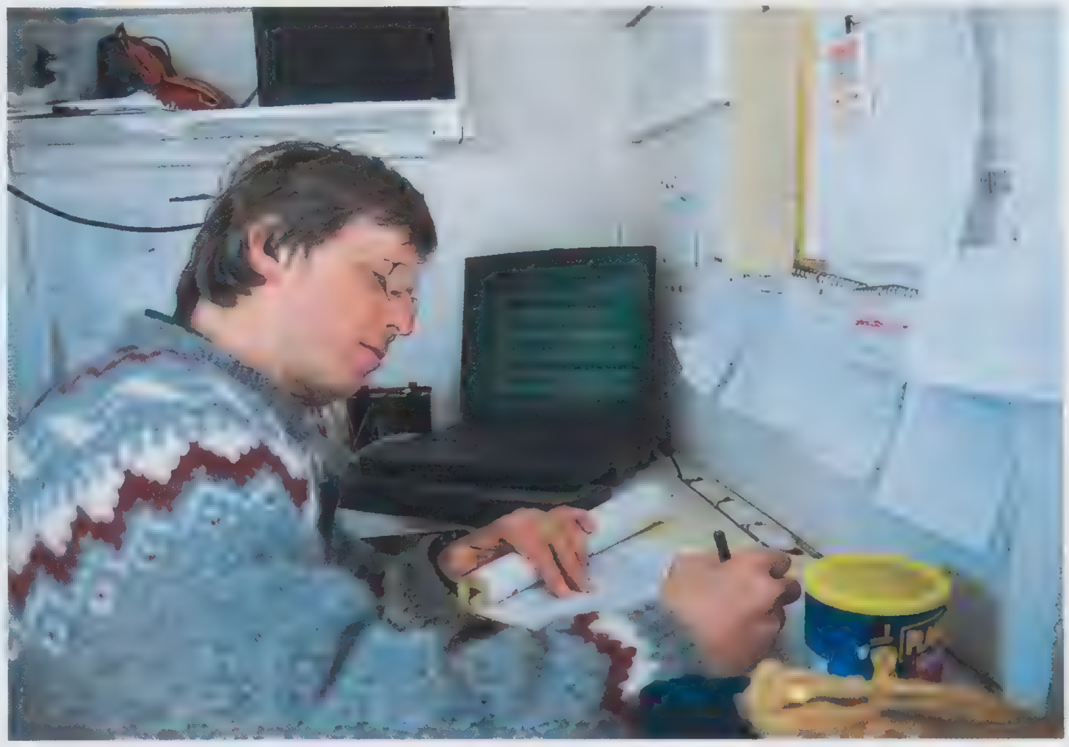
At the "Sled Shed" (above), sounds broadcast from a scattered array of underwater microphones, or hydrophones, are picked up by the antennas and displayed as sonograms on a computer screen. At right, inside the Sled Shed, Bioacoustics Research Program director Christopher Clark watches the sonograms in real time on the computer and records data.

sentations of sounds, showing their pitch and duration through a series of lines, which can be printed on paper or viewed on a computer screen. An array of antennas stands on top of the shed, picking up sounds transmitted via radio from each hydrophone.

When everything is working well, this is an amazingly effective setup, picking up the sound of every vocalizing whale, seal, and other marine animal, as well as the noise of boats and snowmobiles and sometimes even the muffled footsteps and voices of people standing on the ice. But it takes constant effort to keep all the hydrophones functioning. At least twice a day, a bioacoustics maintenance crew must drive snowmobiles to each hydrophone setup, rebreak the ice in the holes, and make sure all the connections are secure. Many things can happen to delicate equipment in this brutally harsh Arctic environment. Batteries can freeze up, wires can break. One hydrophone we checked one morning was gone—the ice it was on had broken off and drifted away, snapping the hydrophone cable. And then there are the polar bears. These hulking animals are curious and seem to enjoy knocking over batteries, chewing through wires, and then defecating or urinating over the whole thing before trudging on, leaving a nice mess for the maintenance crew to deal with.

After spending the night in the "ARF" (Arctic Research Facility), a barracks-like structure a few miles northeast of Barrow, I hitched a ride to the whale census base camp, some five kilometers out, directly offshore on the ice. It was an interesting journey. I traveled on the back of a dogsled, towed by a snowmobile. These have pretty much replaced dogs as a means of transportation among the native people and everyone else in this part of the Arctic. I went with Perry, a local Inupiat Eskimo who works for the whale census and ferries supplies to camp almost every day. It was a wild ride. The sled would launch itself into the air every time it hit a bump and come crashing down hard. I held on as well as I could, hunkered into my parka, trying to stay warm. It was so bright and white and windy, tears streamed from my eyes, even though I kept them nearly closed all of the time and wore glacier glasses.

I slept in a tent with half a dozen other people in the base camp my second night in Alaska. Because the whale census goes on 24 hours a day (made possible by the constant daylight in the Arctic at this time of year), someone is always sleeping in these tents. As one shift is starting, another is getting off. Most people warm up for a couple of hours in the cook tent, which has a nice stove blazing away constantly, and then sleep for a few hours. I pulled the goose down sleeping bag over my head and never looked out all night. It got down to 21 below zero, and there was no heat in the tent. By morning, frost covered the top of my sleeping bag where my breath had frozen the second it escaped through the opening. Even the Inupiats complain about the coldness of the unheated sleeping tents in the



whale census camp. In their whaling camps, everyone sleeps in a single tent, which also serves as a cook tent and always has a stove burning—a much cozier arrangement.

The whale project has both an acoustic and a visual component, with two separate crews. I stood watch for a few hours the next night at the "Perch," a lookout point the visual census crew erected on a ridge of ice near the open water. From there you can see the Arctic pack ice, a huge, moving mass of ice that always covers the polar waters. The width of the open water between the shore ice and the pack ice varies daily and sometimes hourly. It can be several kilometers wide, or it can crash up against the shore ice and even adhere to it—a dangerous situation. Something has to give, and massive sections can rip away from the shore ice (in fact, in 1997 the entire ice platform broke free from the land, setting all the camps and more than 150 people adrift). Or it might buckle and form pressure ridges—mountainous upwellings of ice that freeze in place, creating a rugged white landscape. One day I saw a group of Inupiats pull up their camp and flee, because it looked like the ice might break up at any moment. They took down the entire camp within 15 minutes and hauled everything away behind snowmobiles. I was fascinated to see a large sealskin boat being towed behind a snow machine—such an odd blend of technologies. I was struck by this again and again during my stay in the North.

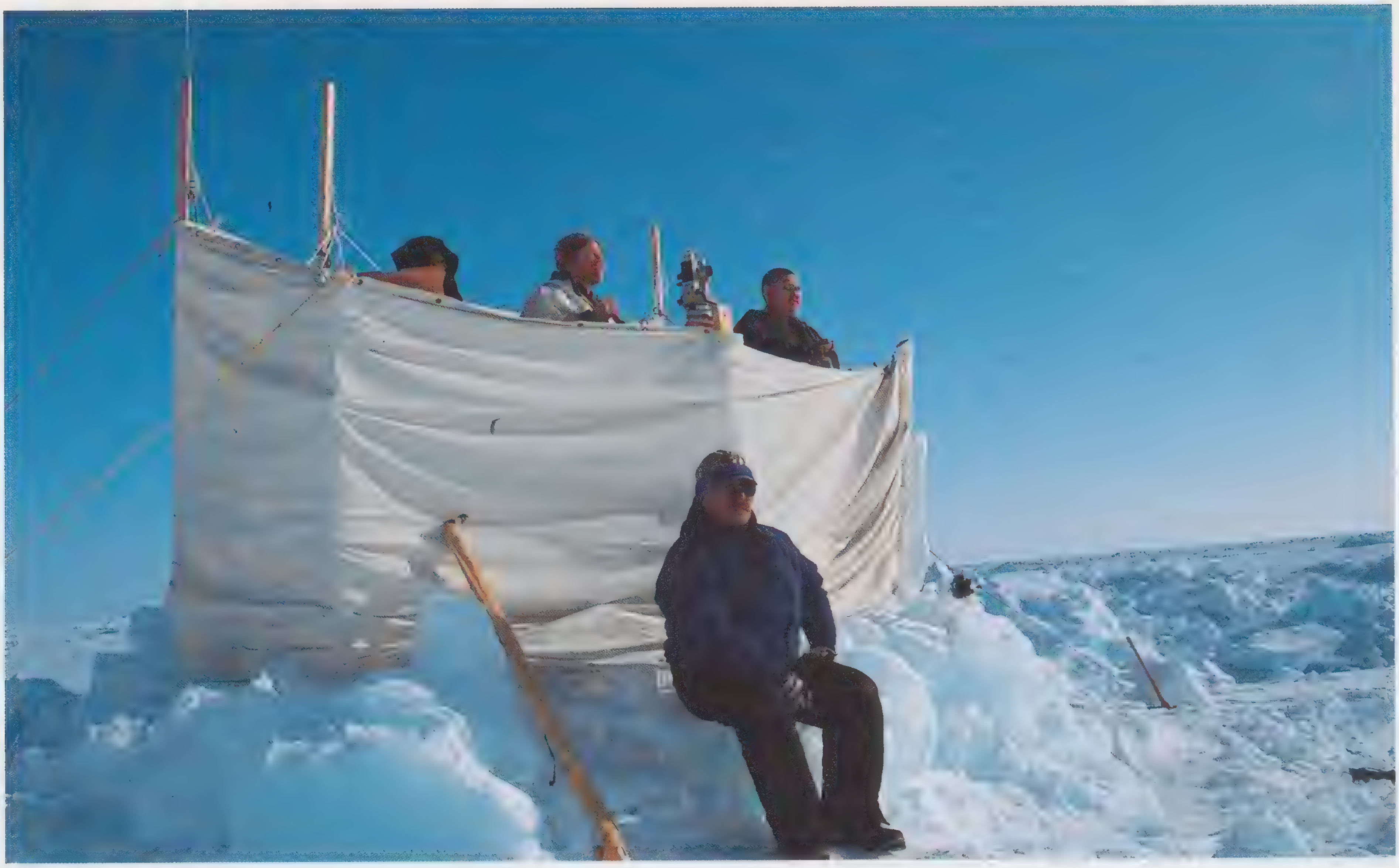
Barrow lies 340 miles north of the Arctic Circle, on the shores of the Chukchi Sea, and boasts of being the northernmost city in the United States—if "city" is the correct term: it has fewer than 5,000 residents. Barrow is a land of extremes, where the sun never sets from early May to August and never rises from November to January. It is part of the North Slope Borough, a county about the size of Minnesota, with a total population of about 6,200 people, 70 percent of whom are Inupiat Eskimos.

The whale census was begun in 1976 as a way to figure out how many bowhead whales the indigenous people could take without harming the species, which is endangered. At first, it was a visual survey only. Based on the first season's whale sightings, researchers estimated the entire world population of bowhead whales at between 800 and 1,500. As a result, the following year, the International Whaling Commission banned all subsistence harvesting of this species—commercial harvesting of bowheads has been illegal since 1947. The Inupiats of northern Alaska, who had hunted bowhead whales continuously for thousands of years, were outraged by this decision. They quickly established their own organization, the Eskimo Whaling Commission, to unite the Inupiat whaling communities and fight the ban. Clearly, not enough data were available to estimate the population of the bowhead whale with any degree of accuracy.

The bowhead whales migrate through the Chukchi Sea to the Beaufort Sea, where they spend the summer. They pass Barrow in late April through May, large numbers usually coming through in three distinct pulses. This is the time the whale census takes place and also when the Inupiat whalers conduct their spring subsistence hunt. If they don't fill their annual quota in spring, they also hunt in the fall.

To provide the most accurate tally of whale numbers, the migrating bowheads are counted

Each day, a bioacoustics maintenance crew must visit each hydrophone site to break up the ice in the holes and make sure all the connections are secure. The Arctic climate and wildlife, such as polar bears, can be hard on delicate electronic equipment, and it is a constant battle to keep it functioning.



The bowhead whale census has a visual as well as a sound component. Here the visual survey crew counts whales at "The Perch," a lookout set up on top of an ice ridge near the edge of the open water. The white canvas tarp can be raised as needed to help block the frigid Arctic winds that often blast through here.

by visual observers at the Perch and by bioacoustics researchers at the Sled Shed. Whenever a whale is spotted from the Perch, one of the observers immediately takes a reading with a theodolite, a scopelike surveyor's instrument that can determine the whale's position. To avoid double counting, another observer jots down the whale's location on a chart and plots its course as it repeatedly appears and disappears from view. The whales move fairly slowly, normally only three or four kilometers per hour, so it's usually not difficult to figure out if you're looking at the same or a different animal—unless a lot of whales are passing. Meanwhile, the bioacoustics crew is back at the Sled Shed, plotting the location of each calling whale. When the data sets are put together later, they provide a better view of the whale migration than any other method.

"Some whales pass by without making a sound," says BRP's Christopher Clark. "We know this because the visual observers see them and we don't hear them on the hydrophones. And we also know that some whales pass unseen under the ice, because we hear them but don't see them. By using a combination of the two methods, we can get a fairly accurate count."

One of the most surreal parts of this trip for me was the presence of the Inupiat whaling crews on the ice. One of their camps was very near the Perch, and I would always see two or three of the men standing on outcroppings at the edge of the ice, clad in white canvas parkas with fur-trimmed hoods and staring out to sea for hours, even in the harshest weather. Gazing at them with my binoculars as they stood near their umiaq (a large, white, dory-shaped boat made of the skins of bearded seals), I thought this scene could easily have been taking place 2,000 years ago—except for the snowmobiles present in every camp.

I had mixed feelings about the whale hunt at first. Like many, I am fascinated by whales. I've seen them in many parts of the world, and they are one of the most remarkable animals on the planet. But in Barrow, I spent enough time on the ice to see how vital the whale hunt is to the cultural life of the Inupiats. The hunt is everything. Everyone in the North Slope Inupiat villages looks forward eagerly all year long to the whale hunt, whether they take part in it themselves or not. The successful whaling crews become heroes in their communities. There is no commercial aspect to the hunt. When a whale is killed, dozens of people from the community come onto the ice to pull the whale out of the water and dress out its carcass. And all the meat and blubber is shared among the Inupiat population of Barrow. If some of the other North Slope Inupiat villages have unsuccessful hunts, the Barrow whalers often share their catch with them.

I remember the first time I was in the Sled Shed when a bomb went off, indicating that a whale was struck. It was a shock: the loud noise followed by silence and a blank computer screen for a couple of minutes. And then the first seals started vocalizing again, and then the whales.

The explosive device in the harpoon is one of the Inupiat whalers' few nods to modernity—and even that is a 19th-century technology. The Inupiats still paddle their umiaqs out with a half-dozen or so men and try to get right up to the whale. (The noise of an outboard motor or even the slap of a wave against the hull of an aluminum skiff can spook a whale, so the hunters prefer to use a traditional sealskin whale boat.) The whalers throw the harpoon by hand at point-blank range, and when it pierces deep into the whale, an explosive charge is triggered, which speeds the death of the animal. Commercial whalers introduced this technology to the Inupiats in the late 1800s, and it has changed little since then.

This is a dangerous undertaking. It would be easy for a whale to crush a boat or flip it over with its flukes, scattering everyone into the sea. And the water is unbelievably cold here. A couple of days after I arrived in Alaska, an Inupiat hunter fell off the edge of the ice beside his camp. His body chilled so quickly that he couldn't get himself out of the water and had to be pulled out by his friends. Even though they hauled him up immediately, he'd already lost all feeling in his legs. If a warm tent hadn't been right there, the episode may well have ended tragically.

I talked once with a college student who had grown up in Barrow and gone along on some whale hunts. He spoke of the experience in an almost mystical way. He said that sometimes a whale would be swimming past far away from them and then suddenly turn and swim right to the edge of the ice beside the camp, where it was harpooned, sometimes without even using a boat. The Inupiats would say that the whale gave itself to them, he told me.

One day I spoke about bowhead whales with Tom Albert, senior scientist with the North Slope Borough. "Basically, all the time and effort we've spent over the years on this census has only proven that the Inupiats were correct," he says. "They had all this knowledge from thousands of years of hunting these whales, and they basically disproved all of the conventional scientific knowledge about bowhead whales. Scientists originally believed that the whales avoid ice pans, as gray whales and humpbacks do. Therefore, when the leads closed up, they thought that no whales could migrate. The Inupiats said no; these whales swim under the ice pans and come up hard, breaking a crack in the ice with the giant protuberance on their backs around the blowhole. They don't have a dorsal fin to get in the way. They may use some kind of echolocation to detect and avoid the really deep-keeled, old ice pans, but they can easily break through a meter of ice to breathe. We'd seen these cracks and holes in the ice before, but we didn't know what they were."

I stood watch for a couple of hours one night between 10:00 P.M. and midnight. The whale spotting was fairly slow, and it was bitterly cold out, with a stiff breeze blowing in our faces, causing our eyes to water and our teeth to chatter. I couldn't seem to stop my eyes from wandering away from the water, out to the ice pans and bergs across the lead, to look for other wildlife. I noticed a Snowy Owl flying slowly across the open water. It landed on an outcropping of ice on a massive floe and perched there for few minutes before moving on. I wondered where it would end up. Some biologists had recently attached satellite transmitters to a nestful of Snowy Owls in northern Alaska and followed their movements as they dispersed. One of them made its way across the sea ice all the way to the north coast of Russia.

A short time later, I saw some movement on another ice floe across the lead. Through my 10x binoculars I could make out the lumbering form of a polar bear, romping along at the edge of the ice. After about 20 minutes, it slipped quietly into the water and started swimming toward our side of the lead. Some Inupiat hunters in another camp radioed us a short time later to say it was coming our way, but luckily it didn't show up. Polar bears pose a constant threat to the whale researchers as well as the Inupiat hunters on the ice.

"I once had the unpleasant task of removing human remains from a polar bear's stomach," says Tom Albert. "It was brought to me for an autopsy after it had killed and eaten a man and then been shot." The victim, a middle-aged Inupiat, had been reduced to bite-sized pieces, leaving only his skeleton. "There wasn't a pinhead's worth of fat on that bear," says Albert. "It didn't even have fat around its coronary arteries. I'd never seen that before."

Polar bear attacks are one of the big worries

Whale researcher Craig George (above) takes a reading with a theodolite to determine a whale's position. This surveyor's instrument is a useful tool in the whale census and helps researchers avoid counting the same animal twice.

In a scene that could easily have taken place 2,000 years ago, two Inupiat hunters stand at the edge of the ice, scanning the sea for hours in search of whales. Bowhead whales (below right) are named for the huge protuberance on their backs around their blowholes. They sometimes come crashing up powerfully, cracking through the ice to breathe.

of the whale census program. Although no one has been lost to a bear or any other mishap since the program began, there were two close calls in the 1980s in which two bears were killed as they attacked researchers. According to Eric Pullman, a biologist at the University of Alaska at Fairbanks, a human being looks like a potential meal to a hungry polar bear out on the ice. "We're about the same size as a seal, their preferred prey," he says, "and, like a seal, we look dark against the ice."

But the whale census leaders have taken steps to minimize the danger, to people and bears. Each person on the research crews is given extensive training, both in how to avoid contact with bears and in firearm use if deadly force is the only way to save someone's life. Researchers travel in pairs or groups whenever possible and always carry loaded shotguns. And a tripwire attached to a siren encircles the entire base camp to warn people in the cooking or sleeping tents if a bear enters camp.

Censusing whales presents some unique problems for researchers. Because bowheads often migrate close to shore and sometimes under the ice, the water is too shallow for sonar to work effectively. And searching by air, researchers miss any whales swimming under the ice or under water in deeper areas. As for using infrared scopes or film to detect them, whales are too well insulated with blubber. I spoke with one biologist who had tried viewing them using infrared detecting technology. He was able to pick out the shapes of caribou easily from the air, but he couldn't even detect the body heat of whales that he could actually see with his naked eye on the surface of the water. Whales are so well insulated that if a dead one isn't pulled out of the water and butchered within 12 to 24 hours, it will begin to rot from the inside out—even though it's floating in some of the coldest water on earth.

Another remarkable thing about bowhead whales is their life span. In this, too, the conventional scientific wisdom was wrong and the Inupiats were right. The latter had long claimed that these whales live well over a century, and they even told stories about individual whales (identifiable by their distinctive scars and size)

that people had seen for generations. Until recently, marine biologists had assumed that the Inupiats were wrong and that bowhead whales only live for about 30 to 40 years. Then, in the early 1990s, something remarkable happened. An Inupiat whaling crew found two chipped-stone harpoon points imbedded deep in the blubber of a bowhead whale they had caught. Since then, four more old stone or ivory harpoon points have been recovered from harvested whales. Craig George, a North Slope Borough biologist, extracted one of them himself while helping an Inupiat hunter cut sections of blubber from a whale. Pushing his knife into a deep scar in the whale's hide, George heard a crunching noise as it hit an object buried in the blubber. He did some more careful cutting and finally extracted a complete stone harpoon point that the animal had been carrying for perhaps a century or more. According to historians, harpoon points like these haven't been used here since the 1870s, when commercial whalers introduced metal harpoon points to the Inupiat hunters. The six early harpoon points are now on display at the cultural heritage center in Barrow.

Of course, the presence of these early harpoon points does not in itself offer scientific proof of the age of these animals. But George sent 48 frozen bowhead whale eyes (taken from whales of varying ages) to Jeffrey Bada, a geochemist at the Scripps Institute of Oceanography in California who had pioneered a technique of analyzing the amino acids present in the lenses of a whale's eyes to determine its age. According to Bada, one of the male bowheads whose eyes he examined may have been 211 or more years old, blowing the lid entirely off previous estimates of the longevity of whales. Clearly, much remains to be learned about these remarkable animals.

On one of my most memorable days on the ice, I went with Perry to help haul up a whale that one of the Inupiat crews had killed. At least a couple of dozen people, mostly Inupiats from Barrow, were there when we arrived, and they already had a rope attached firmly to its tail. The whale was enormous, perhaps more than 40 feet long, and we all lined up along the rope, straining to haul it over the edge of the ice with a block and tackle so it could be butchered and distributed to the villages. All at once, everyone stopped what they were doing and held their heads down solemnly. Then an Inupiat elder delivered a lengthy prayer and a blessing, thanking the whale for its gift of life and affirming the sacred nature of this age-old hunt to the Inupiats, who call themselves the "people of the whale." I think anyone who had been out there on the ice at that moment and seen the depth of feeling on the faces of the Inupiat villagers would have a hard time denying them their whale hunt. This annual event is such an integral part of the life and spirit of their culture that, without it, they would have no culture.

The estimated population of bowhead whales currently stands at more than 8,000 and increases by approximately two to three percent each year—about the same rate as gray whales. The International Whaling Commission allows a total annual quota of about 60 bowheads (this number is raised or lowered according to whale census data) to be taken by native subsistence hunters from 10 North Slope villages. As long as bowhead whale numbers continue to rise like this, it's difficult to think of any good reason why the Inupiat people should not be allowed to hunt whales, as they've done for more than 2,000 years. ■

A group of Inupiat hunters pulls a dead whale to the edge of the ice. As soon as word is out in the community that a whale has been taken, dozens of people come to help pull it onto the ice where it can be butchered. The meat and blubber are shared with all the local Inupiats.

SCOPING FOR OPTICS

TIM GALLAGHER

Author Ken Rosenberg checks out Swarovski's latest prototype, the ATS 65—just one of the 23 spotting scopes sent by manufacturers for this review.

BY KENNETH V. ROSENBERG

Searching for the best and brightest spotting scopes for birding

This is an exciting time to be a birder—especially if you have enough money to buy fine optics. Not too many years ago, high-quality spotting scopes were toys of the elite few; today a decent scope is standard equipment for a majority of active birders. This proliferation of high-power, high-quality optics has led to a greater appreciation of the finest details of avian shapes and plumages and contributed to a new generation of field guides that tell us what we are seeing. Simply put, better optics can create better birders. If you want to discern the tertial pattern on a juvenile dowitcher at 200 yards, turn a distant speck into an obvious Golden Eagle, or just gawk at the exquisite feather detail on birds at your feeders, a new spotting scope might be in your future.

But buying a decent scope can be a significant investment. Selecting the right model for your needs and your budget is vitally important. Fortunately, the increased demand for quality optics has led manufacturers to produce a dazzling assortment of scopes from which to choose and has kept their prices from skyrocketing. In this review, we compare and contrast the most popular scopes on the birding market, from lightweight new zoom scopes to astronomy "crossovers" that can reveal a bird's identity at incredible distances. Offering their opinions on these various models were 20 birders from in and around the Lab of Ornithology, ranging from casual observers to serious fanatics.

Spotting the right scope

In spite of variations in outward appearance, most conventional birding scopes share the same set of basic features, and choosing among them often boils down to figuring out your personal preference. To be sure that you're selecting the model that will work best for you, no substitute exists for hands-on testing—either in a birding shop or (far better) in the field with other birders. Consider the types of birding you enjoy most. If you intend to lug your scope over vast mudflats or up to your favorite hawk-watch, then weight might be a major factor; if you bird mostly from your car, this is less important. Some scopes are extremely rugged and waterproof; others (usually the less expensive models) are not. If you want to be able to sort through shorebirds on distant mudflats under any conditions, then you may not want to compromise on getting the highest-quality image at the highest magnification possible. Finally, if you wear eyeglasses, pay special attention to our ratings in that category. Our bespectacled reviewers (about half) varied greatly in how their glasses sit on their faces and how far the lens is from the eye, so beware that published values for eye relief or field of view may not indicate what you will actually see. Some scopes may offer bright, crisp images, but their poor eye relief may result in a narrow tunnel view that is unacceptable if you wear glasses.

In general, scopes with objective (front) lenses of 80mm or larger are brighter and have a wider field of view than smaller models, but they are also usually longer and heavier. Most models offer a choice of zoom or fixed-magnification eyepieces. Although some birders claim that fixed-magnification (usually 22x or 30x) wide-angle eyepieces provide the best image possible (and this may be true), I personally find that the ability to zoom to higher magnification is absolutely essential for birding with a scope. Many of the top models provide a perfectly crisp and bright image at 60x, and at this magnification it is possible to pick out

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TIM GALLAGHER (2)

Scope review participants spent three days gazing through a large lineup of scopes—sometimes focusing on utility poles and insulators, but occasionally getting to study a Red-tailed Hawk or starling that landed in the viewing area.

and identify birds that simply can't be seen at lower magnification. And my eye cannot discern any loss of quality at the low-magnification settings, compared with an equivalent fixed-magnification eyepiece. Several models also come in a choice of standard versus fluorite-coated, high-density (HD), or extra-low dispersion glass (ED) lenses. Under normal viewing conditions and at low magnification, it's hard for most people to tell the difference between scopes with HD, ED, or fluorite glass and those without, but if you zoom to high magnification through heat waves or in dim light, the extra sharpness and color resolution produced by these higher-quality optics are readily apparent. Most scopes provide a very good image at low magnification, so if you prefer a fixed, lower-magnification eyepiece or you can tolerate the loss of crispness at higher magnification, then going with a non-HD, non-ED, or non-fluorite scope will save you some cash.

Yet another feature to consider is the choice of angled or straight-through eyepiece designs offered on many models. This is largely a matter of preference, but if you routinely share your scope with people who are taller or shorter than you—which always happens on birding tours—the angled models provide the most versatility. On the other hand, if you are the primary user of your scope, you may find it easier to find birds quickly (especially in flight) with the straight-through design.

Most of the astronomy telescopes we reviewed come with a 90-degree angled eyepiece that is less convenient than the straight-through or 45-degree-angle views offered with conventional birding scopes. If you intend to use your scope for both astronomy and birding, though, this feature should not be a major drawback.

In the comparative table on pages 30–31, each scope was tested using a 20x–60x zoom lens or its closest available equivalent. I asked reviewers to rate the overall image in terms of sharpness and brightness at both low and high power. The reviewers then rated the overall "feel" of each scope (ease of focus, zooming, and so on). Eyeglass wearers then rated the "eyeglass friendliness" of each scope—how much tunnel vision is apparent when zooming; the usefulness of the eyecups. Finally, I asked each reviewer to rank the scopes in each category (17 zoom scopes, 6 astronomy scopes) in terms of which model they would most or least like to own.

The good, the bad, and the best

Among the conventional birding scopes, two models stood out in a virtual dead heat for the top spot: the Leica Televid 77mm APO and the Swarovski ST80 HD. Both scopes represent the pinnacle of birding optics, providing an extra-bright, crisp-from-edge-to-edge image right up to 60x. The primary difference between these scopes (besides their overall appearance) is their focusing mechanism. Our reviewers were fairly evenly split in their preference for the wide focus ring that wraps around the entire barrel of the Swarovski scope and the small, dual (coarse and fine focusing) knobs inset on top of the Leica. Some people found that the effects of hand shake were more pronounced with the Swarovski scope while panning at high magnification, whereas other people didn't notice this. Some reviewers complained about the two focusing knobs on the Leica, but others loved them. The Leica also sported the same snap-out eyecups that appear on their binoculars—a big improvement over the conventional rubber eyecups for eyeglass wearers. Obviously, personal preference was a big factor in this review, and I urge you to check out both scopes if you're in the market for the best. Not far behind these top contenders was the Kowa TSN 823, which our highly critical reviewers noted was not quite as sharp or "contrasty" at high magnification and not quite as eyeglass-friendly as the previous two models. Still, the 82mm Kowa is in a league above any scope available a decade ago.

With one clear exception, our reviewers preferred 78mm–100mm scopes to the corresponding 60mm models. In general, the smaller scopes offer a narrower and darker image at high magnification, and most of them are poor to useless if you wear glasses. Blasting this truism, and setting a new standard in scope design, is the new Swarovski ATS 65 HD. We were fortunate to get a peek at the first prototype to enter the United States. (Zeiss also promised to send a prototype of their new scope, but it never arrived.) Weighing in at only 48 ounces, the Swarovski ATS 65 features the same ergonomically molded alloy body as the company's new EL series binoculars, with wonderful eye relief and turn-and-lock eyecups for us glasses-wearers. Optically, this scope offers the same exquisite edge-to-edge crispness as its larger cousin, even at 60x. In a direct comparison made in waning light, however, the ATS 65 was noticeably darker than many of the 80mm scopes, an unfortunate consequence of physics. Surprisingly, the visible field of view of the ATS 65 at 60x was actually 20 percent wider than that of the ST80 scope. Another nice feature is the one-piece molded "foot" designed to mount directly onto a Bogen/Manfrotto fluid tripod head, without requiring a quick-release plate. This essentially eliminates any shake or wiggle associated with the tripod mount, and it shouldn't loosen with time. To top it off, this scope focuses down to eight feet. So, if you are seeking the best available optics in the friendliest package, and if extra brightness under dim conditions is not your primary concern, this may be the perfect scope for you.

In the next tier are a number of very good scopes that were ranked lower for various reasons by many of our reviewers. In terms of image quality, the less-expensive non-HD Swarovski ST80 and non-APO Leica Televid scopes compared nicely with the Nikon ED 78 Fieldscope, the Fujinon Super ED 80, and the two Optolyth models. A few reviewers ranked the Nikon as their favorite scope, but others didn't care for the overall feel or thought that the image was slightly darker or duller at the highest magnification (actually 75x). Eyeglass wearers were critical of both Nikon models, which provided unacceptably narrow views at higher magnification. The lightweight and eyeglass-friendly Fujinon held its own with the top competitors, and at the prices we've seen at discount retailers, this might be the best value of the lot. At 60x, this scope was crisp in the center of the image, but blurred toward the edges. The Optolyth scopes, which are popular in Europe, also offer fine optics, but reviewers balked at their heavy and clunky design.

The Swarovski AT80 HD (above) and its straight-view counterpart, the ST80 HD were standouts as traditional style birding scopes, along with the Leica Televid 77mm APO.

The relatively new Pentax PF80 HD and the Bausch and Lomb Elite 80 ED scopes definitely represent a step down in overall performance. Both scopes have some nice features: the Bausch and Lomb is sleek and reasonably priced, and the Pentax offers a wide, bright image at low magnification. But neither scope was sharp at 60x. Also in this tier are the Kowa TSN 663 and the Nikon 60mm Fieldscope II. These smaller models are fine at low magnification, but their image darkens considerably at higher magnification. And their tiny fields of view are simply unacceptable if you wear

Model	Objective lens (mm)	Price [1]	Weight (oz) [2]	Close focus	Image (20x) [3]	Image (60x) [3]	"Feel" [3]	Eyeglasses [4]	Category rank [5]
ZOOM SPOTTING SCOPES									
Bausch & Lomb Elite 80 ED	80	1,212.95	57.6	19' 0"	2.3	3.1	2.3	2.3	7.8
Bausch & Lomb Elite 70	70	921.95	41.6	33' 0"	2.8	3.1	3.4	3.7	9.8
Bushnell Spacemaster	60	298.00	36.8	23' 0"	2.6	3.0	2.8	2.9	9.4
Fujinon Super ED 80	80	998.00	54.4	16' 4"	1.6	2.3	2.3	2.0	5.4
Kowa TSN 823	82	2,163.00	62.4	19' 0"	1.6	1.8	1.8	2.1	2.8
Kowa TSN 663	66	1,301.00	41.6	16' 2"	1.3	2.7	2.4	4.4	7.7
Leica Televid 77mm APO	77	1,754.00	72.0	11' 0"	1.2	1.4	1.6	1.4	1.5
Leica Televid 77mm (non-APO)	77	1,254.00	72.0	11' 0"	1.5	2.2	1.6	1.4	3.4
Nikon ED 78 Fieldscope	78	2,521.90	54.4	13' 1"	1.6	2.3	2.2	3.0	4.8
Nikon Fieldscope II	60	1,691.90	44.8	13' 1"	1.8	2.8	2.4	3.0	7.2
Optolyth TBG80 GA/HD	80	1,498.00	59.2	18' 8"	1.7	2.2	2.5	2.3	6.9
Optolyth TBG100 GA/HD	100	2,298.00	95.4	43' 7"	1.7	2.4	2.9	2.4	7.7
Pentax PF80 HD	80	2,154.44	72.0	18' 0"	1.8	2.6	2.4	2.3	6.6
Swarovski ST80 HD	80	1,942.22	60.0	18' 0"	1.1	1.4	1.7	1.5	1.8
Swarovski ST80	80	1,486.56	60.0	18' 0"	1.6	2.3	1.7	1.5	4.5
Swarovski ATS 65 HD	65	1,500.00	48.3	8' 0"	1.2	1.8	1.6	1.4	2.4
Swift Nighthawk ED	80	1,240.00	48.0	28' 5"	2.5	4.4	2.5	2.0	11.8
ASTRONOMY SCOPES									
Celestron C90	90	399.00	72.0	4' 4"	3.0	4.5	3.6	1.8	5.4
Celestron C5	125	599.00	88.0	10' 6"	n/a	3.0	3.3	1.8	4.3
Celestron 102mm Wide View	102	329.00	81.6	19' 3"	1.5	3.2	2.9	1.8	4.0
Questar Birder	89	3,800.00	72.0	7' 2"	1.0	1.4	2.5	1.0	2.8
Tele Vue 76	76	1,675.00	104.0	19' 8"	1.0	1.4	2.2	1.3	2.0
Tele Vue 85	85	2,080.00	134.4	29' 1"	1.0	1.0	2.2	1.3	1.1

[1] Manufacturer's suggested retail price includes zoom eyepiece; these prices are only provided as a basis for comparison; actual prices vary greatly and may be considerably lower. [2] Weight includes standard zoom eyepiece. [3] Compared across all models (scale of 1–5, with 1 being the best). [4] Overall "friendliness" to eyeglass wearers (scale of 1–5, with 1 being the best). [5] Overall subjective ranking by 20 reviewers within each category.

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We looked at a number of astronomy-type scopes, including two models from Tele Vue—the 85 and the prototype Tele Vue 76 (above). Although they are somewhat heavier and more awkward to use than traditional birding scopes and are not waterproof, both of these scopes provided amazingly sharp, bright views of birds at a whopping 150x magnification.

TIM GALLAGHER

glasses. Unfortunately, it's hard to say anything positive about the Swift Nighthawk, which provides a dull and blurry image and seems badly outmatched by many of the other scopes.

The remaining two zoom scopes in our test, the Bausch and Lomb Elite 70 and the Bushnell Spacemaster, were not intended to compete with the top guns. These are as close as you can get to an inexpensive scope. Of the two, our reviewers by far preferred the venerable Spacemaster, which provided a quite decent image at maximum magnification (45x). Virtually the only scope available to birders for decades, the trusty Spacemaster is still a good option for people on a limited budget. If you don't wear glasses and you prefer an extremely light and compact scope for traveling or backpacking, the Elite 70 is another viable option. Although the image it provides is somewhat narrow and dark at 60x, it is actually quite sharp.

Astronomy scopes for birding

Our review included six scopes that were designed primarily for astronomy but offer features that demand the attention of birders as well as birding scope manufacturers. Among these is the legendary Questar Birder scope, which for more than 30 years has set an optical standard unmatched by any conventional birding scope. But all of these scopes have drawbacks that may limit their popularity with birders. The 90-degree-angle eyepiece on most of these scopes requires you to look straight down, which makes it hard to spot birds quickly and can literally give you a pain in the neck. Furthermore, these scopes usually reverse the image in the eyepiece so that when you pan left, the image you're viewing moves to the right. This makes it more difficult to follow a bird, at least until you get used to it. Also most of these scopes are big and bulky, and they lack waterproofing. On the positive side, though, these astronomy telescopes offer a wider variety of eyepieces, which you can change in seconds, and offer much higher magnification than conventional birding scopes.

Of the three Celestron scopes we tested, the C90 is the most familiar, with its Questar-like design, amazingly close focus capability, and very reasonable price. Its bulky size, awkward focus ring, and dull, mediocre image, however, simply don't compare with other spotting scopes. The C5 is even bigger and bulkier, and, although the image is slightly sharper than that of the C90, this scope is probably not worth a second look from birders. The third Celestron scope we tested, the 102mm Wide View, represents a genuine attempt to reach out to the birding market. With an extra mirror that circumvents the image reversal and a more conventional design, this scope provided a sharp image at low magnification but wouldn't focus sharply at 60x with a zoom eyepiece.

The biggest surprise in our scope testing came when we lined up the top-ranked Leica APO and Swarovski ST80 HD scopes against the Questar and the two Tele Vue models. The Questar we used was fitted with 40x and 60x eyepieces (unfortunately, not as powerful as the ones Questar has sent us for previous reviews), and it did not stand out at these magnifications against the Leica or Swarovski scopes. But using the equivalent of a 25x–75x zoom lens, the Tele Vue 85 attained an almost unimaginable level of brightness and edge-to-edge sharpness. As the day became more and more overcast and dusk was approaching, the Tele Vue provided a significantly superior image at 75x than either the Swarovski or Leica could muster at 60x. The Tele Vue 76, a slightly smaller and lighter version of the 85, was equally sharp but not quite as bright—its image at 60x was virtually identical to its two conventional competitors. Both Tele Vue scopes have a smooth and precise rack-and-pinion focusing system that is easy to operate with either hand—a nice feature when you're panning with your scope or trying to take a picture through it with a digital camera.

To test the capabilities of these scopes further, I lugged the Tele Vue 85 to the shore of Cayuga Lake on a sunny, calm afternoon. Weighing in at more than eight pounds, this behemoth was a challenge just to get out of the back seat of my car. But once I'd set it up and pointed it at the lake, the Tele Vue took me for one of the best birding rides of my life.

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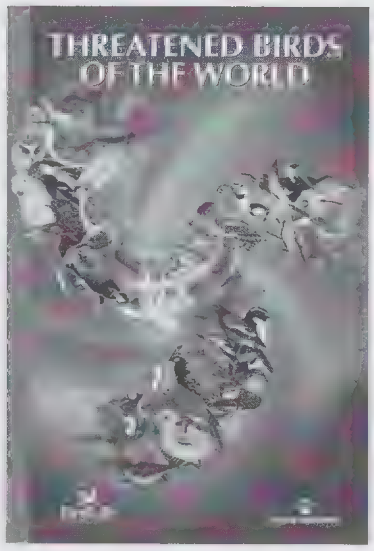

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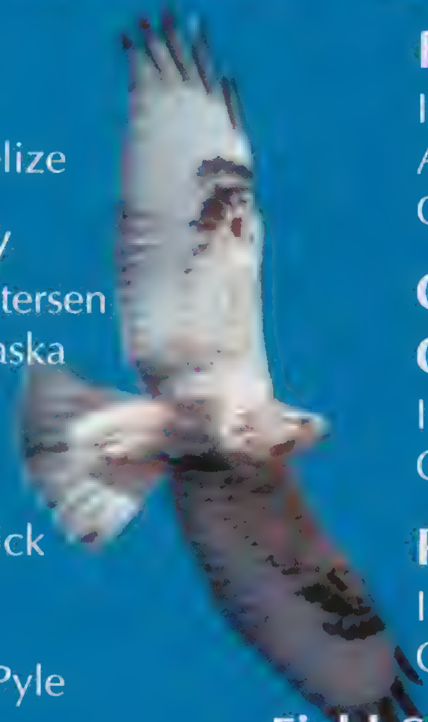

Scanning out across the lake at 75x, I spotted a whitish speck in the distant heat waves that I thought might be a loon. I then inserted a 2x Barlow lens between the zoom eyepiece and the scope, doubling its magnification to an incredible 150x. I could then clearly make out the face pattern and upturned bill of a Red-throated Loon. This local rarity was not even visible through my 10x binoculars. Continuing to play at 150x, I could discern the eye color of some immature gulls on a jetty 200 yards from the shore—ah, if only shorebird season weren't so long past!

Final words and recommendations

With more than 20 fine models available, shopping for a new scope should be as much fun as it is challenging. Overall, I believe our review has narrowed the field, with a few top contenders in each category clearly rising above the pack. If you know your budget and your bottom line, the following recommendations should help guide you to the right choice. If you are looking for the overall best scope for a variety of birding conditions, and one that is easy to use, easy on your back, and easy to pack on trips, I wholeheartedly recommend the new Swarovski ATS 65 HD. If you require the absolute brightest and sharpest image under the toughest birding conditions—say scanning a moonlit pond at 11:45 P.M. at the World Series of Birding—then I recommend either the Leica APO Televid 77 or the Swarovski ST80 HD. If you are on a moderate budget (about $1,000), I recommend either the non-HD Swarovski ST80, the non-APO Leica Televid-77, or the Fujinon Super ED 80. If you are looking for the most inexpensive model that will still improve your birding skills and enjoyment, I'd opt for the tried-and-true Bushnell Spacemaster. But if you want to push the envelope of high-magnification birding, I'd definitely check out both of the Tele Vue models.

As a final word, I offer two challenges to the fine companies that brought us all this coated glass. First, I'd love to see the "extreme" birding scope—with a Tele Vue quality 75x–150x image in a truly birder-friendly and durable, waterproof package. Second, now that we have a flood of top-of-the-line, expensive scopes, I'd like to see some competition for the Spacemaster. Surely it's possible to produce a decent and user-friendly spotting scope that every birder can afford. ■

Kenneth V. Rosenberg is director of Conservation Science at the Lab of Ornithology.

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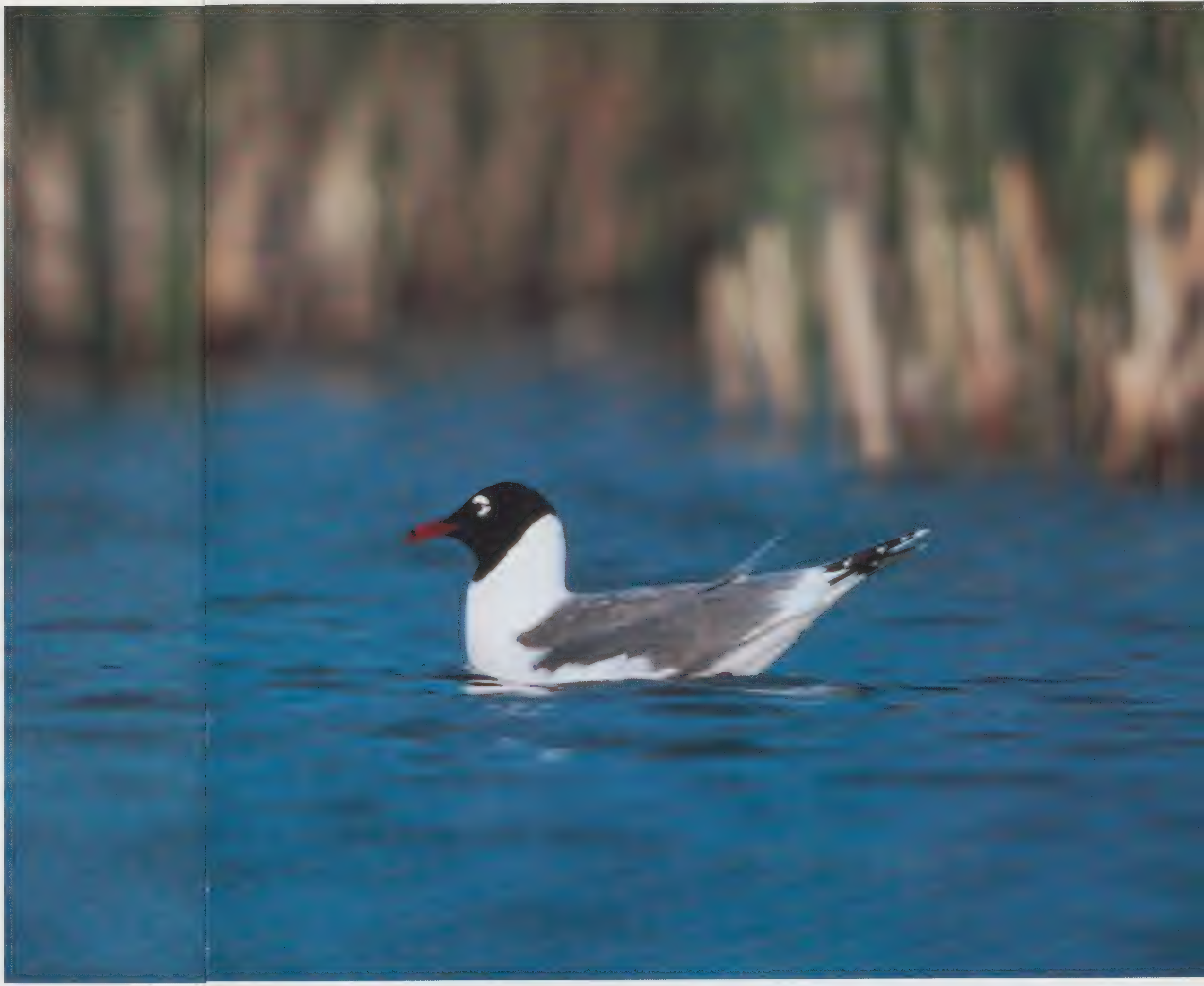
“PIGEON” *of* THE PLAINS

TEXT AND PHOTOGRAPHS BY WILLIAM BURT

The elegant Franklin’s Gull is a fitting emblem of the rolling plains and pristine skies of the northern Great Plains



One of the most beautiful of gulls, the Franklin’s is not one that you will find scrounging for food in refuse heaps. This bird thrives in pristine grasslands, far from big cities.

Swarming, squabbling opportunists: that’s the picture I get, generally, when I think of gulls. Not only do they accept the teeming and the waste and ravages of man, they seize upon it, revel in it, and in direct proportion to it, thrive. Think gulls and you think leavings; you think refuse heaps and offal strewn from fishing boats and garbage bags and dumpsters and McDonalds parking lots. Like rats, most gulls opt not for the wild free spaces but for the befouled, the artificial, the urban or suburban—almost any peopled space, so long as easy pickings are to be had. These birds are tough, adaptable, resourceful, no doubt about it; and they are successful, like the teeming species they so readily depend upon. Successful, yes, but not endearing, not to this eye. I am no fancier of gulls.

But there are exceptions, as there are to every rule, and I have a certain one in mind, an admirable gull: Franklin’s Gull, the so-called “prairie pigeon” of the Northern Plains. You do see Franklin’s schooling in the wake of plows and scattering to pick the upturned worms and grubs, but that’s about as beholden to mankind as they get. If you see a gull in town, picking bread scraps in a parking lot, it’s probably not this one but that pedestrian, the Ring-billed Gull: that’s this writer’s observation, anyhow, based on a half-dozen lengthy summer visits to the plains. The Franklin’s is a true insectivore, happy enough to glean those upturned goodies in the fresh-turned furrows, but primarily dependent on grasshoppers and the abundant insect fare thronging its accustomed lakes and sloughs, such as flies and mosquitoes, midges, and dragonflies. Like other gulls, it sometimes gathers at the site of some mass insect hatching and glides about deliriously in circles, gulping, as if in a drugged euphoric thrall.

No, unlike that other handsome hooded gull of marshes, the eastern Laughing Gull, Franklin’s is not one to hang out at McDonalds. This is a discriminating bird, having more in common with such staunch natives of the plains as the Sprague’s Pipit, say, which thrives only where the grassland has never seen a plough: both birds would rather perish, it seems, than compromise. Indeed, the Franklin’s disappeared from much of its early range at the turn of the past century, when prairie marshes were being drained willy-nilly for agriculture; its numbers stabilized only with the establishment of national refuges and protection of the remaining marshes.

Franklin’s is the wild gull, emblem of the rolling plains and pristine skies and the remote lakes and sloughs it retires to for nesting. It is a winsome bird, dovelike and soft-featured, black-hooded and gray-mantled and clean white below, tinged rosy-pink in spring. Its flight is effortless and graceful, swift, and its wild, far-carrying cries are affecting, well suited to its land of distances. You’re apt to see it in loose groups anywhere on the Northern Plains, racing with the wind, wings raked, or wheeling in the tranquil blue, so high sometimes that all your eye can catch is a white glint, or floating on the lakes and sloughs, or standing idly on shores, benign and smooth as dolls. For all its widespread presence and familiarity, though, this plains gull does keep one aspect of its life a secret: the location of its nesting colonies.

A Franklin’s Gull nesting colony, wrote Arthur

Cleveland Bent in his *Life Histories of North American Birds,* "is one of the most spectacular, most interesting, and most beautiful sights in the realm of North American ornithology. The man who has never seen one has something yet to live for." The birds congregate in massive numbers, up to several thousand pairs (once many more), and build their nests close together in some shallow lake or slough. But their colonies have always been few and far between, and, to the dismay of more than one early ornithologist, they are apt to shift location from year to year, depending on the caprices of precipitation and local water levels. "Like the Indians of the plains," Bent wrote, "they are a wandering, nomadic race, and for some mysterious reason, unknown to any but themselves, they move about from place to place, choosing each season the locality which suits their fancy."

Bent himself had watched in longing many times as they streamed out across the plains by morning, to return again by evening, and he even tried to follow as they hied their way home over the horizon; but their cities had remained elusive.

Then one day in Saskatchewan, in June 1905, he was riding over the plains in a buggy with companion H. K. Job, another eastern ornithologist. He came over the crest of a hill above a low plain. They stopped, scanned with a field glass, and there in the distance lay a dark band of marsh and the bright sliver of a lake—and, above it, a hovering white cloud.

The flight of a Franklin's Gull is effortless, graceful, and swift. Although loose groups of these birds can be seen almost anywhere on the northern Great Plains, racing with the wind or wheeling in the tranquil blue sky, their nesting colonies are difficult to find.

A Franklin's Gull nesting colony, wrote Arthur Cleveland Bent, "is one of the most spectacular, most interesting, and most beautiful sights in the realm of North American ornithology. The man who has never seen one has something yet to live for."

Franklin's Gulls nest in reeds in remote lakes and sloughs. Their young are well camouflaged and difficult to spot.

"We knew at once that we had won the long-sought prize," he wrote.

The two lost little time in making their way across the intervening mile, tethering their horse, and wading out toward the churning cloud, impeded little by the flimsy reeds and knee-deep standing water. Gulls rose continually and the cloud swelled, the clamor grew, and the heaped-up nests of reeds began appearing, some holding eggs, some young. The nests were placed in every possible situation, many so close together it seemed miraculous that each owner could find and settle down upon its own.

Clouds and clouds of the beautiful birds were rising all around us, and the din of their voices was terrific, as they hovered over, circled around, and darted down at us in bewildering multitudes. If we kept still they would gradually settle down all around us, but if we gave a shout the result would be startling as the whole surrounding marsh would seem to rise in a dense white cloud, and the roar of their wings mingled with the grand chorus of cries would be almost deafening. But they were very tame and we had plenty of opportunities to admire the exquisite beauty of their plumage, seldom surpassed in any bird; pearl gray mantles, delicate rosy breasts, black heads, and claret-colored bills and feet.

In all, Bent guessed that this colony held some 15,000 to 20,000 pairs. Today, that colony of 90-odd years ago is gone, the lake itself a mere ghost print on a wispy plain. But a few miles to the north and west, secluded among low hills, lies a lake oasis still blue and green and well supplied most years with runoff from a north-flowing feeder stream, and still boiling with birds: avocets and Willets, coots, five species of grebes, terns (three species), ducks (at least 13 species), blackbirds (two), American Bitterns, Marsh Wrens . . . and, out toward the center, a good half mile from the nearest shore, a colony of Franklin's Gulls. I waded out to the periphery one day and found it a modest colony compared with Bent's—hundreds of pairs I'm sure, but I don't think thousands. But those hundreds are impressive, still. Near dusk they come streaming in from miles around, gather in a cloud, and churn; and the din of their cries is audible at least two miles away, like the faint roar of a distant ocean—except that this roar is alive, not merely pounding sea on shore, but voices.

Mr. Bent would know that sound. And he would be glad to know it's there, I think. ■

William Burt is a photographer and the author of Shadowbirds *and* Rare and Elusive Birds of North America. *He lives in Old Lyme, Connecticut.*

BHL

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Flying Field

EVERYDAY COMPANIONS

by Mel White

While people in offices and homes everywhere were banding together for support, I was looking for an escape from humanity

I am not a morning runner, but these September days had been inviting me too temptingly to get up, get moving, and get it over with. The natural order of the seasons was reversed, here near their nexus: mornings felt like fall, and summer returned each afternoon. It had been a cool summer anyway—oddly so—and at 7:30 it was only 60 degrees, with crisp air that a weather front had purged of humidity.

Sometimes, for a distraction, I count the birds I see or hear as I trudge around my four miles. There are days in spring when I can tally close to 20 species, but this morning I didn't bother. It was the worst time of year for suburban woodland birds. Most of the residents had stopped singing, or even calling much, and the winter visitors hadn't arrived yet. In a few weeks the White-throated Sparrows would be whistling in the hedges and the Yellow-rumped Warblers would be *check*ing in the trees, but now there was only the occasional buzz of a chickadee or scream of a Blue Jay.

Back home, I'd just walked in the door when the phone rang. My friend Andrea knows I don't have a television and mostly avoid other forms of news, too.

"Have you heard what happened in New York?" she asked.

Within an hour two more people called, and I knew what had happened in New York, and Washington, D.C., and Pennsylvania. Parts of it, anyway, at first disjunct and then forebodingly patterned. One friend had a daughter who was in Manhattan's financial district on business, staying at the Millennium Hilton across the street from the World Trade Center. She was calling people just to try to pass the time, somehow, until she got news. She is a strong woman, and fear was fuzzing the edges of her words. I talked to her as long as she wanted, amazed that she wasn't absolutely frantic. Within two hours she heard that her daughter was all right, a report passed through a chain of messengers beginning with a total stranger in a shop. It was then, after, that she cried.

By midafternoon I'd had enough of the phone reports, the dispatches from well-meaning people conveying an unending stream of fresh horror. Despite everything, an ingrained it's-a-weekday work ethic made it hard to shut down the computer, made me feel actually guilty about putting on a hat and walking out the front door—and, observing myself from some psychic distance, I didn't know whether to laugh or be sad. The world was mutating around me, and yet no cow heading to the barn was more set in its ways.

In the car, as soon as I turned the key, I hit the radio's OFF button so I wouldn't hear some newsreader's practiced sincerity. I drove, carefully, to a park west of town on the Arkansas River. The variety of habitats there, and the proximity of the river flyway, meant I might see a bird or two—maybe an Osprey or some Caspian Terns—and I was fairly certain that nobody would be on the trail. While people in offices and homes everywhere were banding together for support, I was looking for an escape from humanity.

At a swampy patch of woods near the parking lot a Black-and-white Warbler hop-hopped around a tree trunk. As I watched this compact incarnation of the word "fidget," a female American Redstart flew into the binocular field: a fall migrant that may not have traveled far yet, maybe just 50 miles or so. Like everyone else, I'm a sucker for redstarts, their beauty and acrobatics and anthropomorphized perky attitude. I could almost feel my blood pressure dropping. A band of chickadees crossed the trail one at a time, follow-the-leader. A cardinal *chip*ped. A Red-winged Blackbird *chack*ed. Common things. Everyday companions.

Out in an open area I heard and saw a small flock of Fish Crows flying downriver, in no hurry. Little Rock is just barely north of this species' winter range, and its seasonal absence lasts about as long as going out and in a revolving door. I could see the Arkansas River from here, and I scanned it fruitlessly for Ospreys or White Pelicans. Another week or two, I thought—and came to a full stop as if startled awake from a dream. What would life be like in two weeks?

The path curved into a willow and cottonwood marsh, where a still-spotted fawn stood in the middle of the trail and stared at me, as inanimate as the asphalt under its hooves. I imagined its heart was pounding inside: stay frozen, or flee? I stood still, too, waiting for it to wander off unpanicked. And stood. And stood. The standoff started to seem a little silly. Somebody had to move, so I did, taking a few steps and stopping again when the fawn wheeled, raised its white flag, and bounced into the marsh.

White-eyed Vireos sang and a Green Heron squawked, but the most common winged things in the marsh were viceroy butterflies. There was one perched shoulder-high every 20 yards, and they continually flew at each other, swirling around and up, up in orange minitornadoes before breaking away and returning to the same lookout posts they'd held before—and then doing it all over again. So much energy in such tiny bodies, and tinier brains, expended in this scouting, courting, aggressing, defending! Something in them knew their time on this earth was limited; fall's first freeze was ineluctable, and they should make the most of the sun and warmth and life remaining to them. Hanging from the branches of a trailside ash, the fruit of Carolina moonseed was already brilliant scarlet.

As I followed the path I remembered a time, almost 20 years earlier, when I was working at a job I didn't much like, doing things I wasn't much suited for, dealing with a boss whose erratic moods made going in the door every day a chancy venture. As had been the case in other jobs, I spent an inordinate amount of dreamtime looking forward to my vacations—killing time, really, until I could travel to faraway places where I could see new things, and especially new birds. I lived from trip to trip.

One morning as I walked, head down, no doubt, across the parking lot to work, I happened on a leaf flattened on the pavement. A single, perfect, just-fallen white-oak leaf—which, not being much good with plants, I was somewhat pleased to recognize. That's all it was. Not a Peregrine Falcon diving from a nearby office tower, or a colorful butterfly flapping by, or even a bright-yellow bitterweed growing in a sidewalk crack. Just a leaf. And yet I was made suddenly, intensely happy, in a burst of feelings that came upon me in an all-at-once jumble. Somehow, in that moment it became altogether clear that, no matter what happened, the natural world would be there, all around me, and that it would always have the power to sweep me up in its infinite variety. I saw that I could lose a job, lose material things, even lose a friend, but I would never run out of things to see and learn and wonder at—from the banks of the Amazon to the national forest an hour away to my own backyard. I saw quite plainly that I would spend a lot more time in my backyard than in Amazonia, and I saw that it didn't have to be a disheartening prospect.

Believe it or not, that parking-lot epiphany has popped into my head scores, or I suppose hundreds, of times since then. Birds and other aspects of nature had been my main source of pleasure and satisfaction for years, but that was the moment I realized their true importance. Before, I'd thought of jobs, goals, ambition—some sort of striving for something—as the real world, and the time I spent birding, hiking, or lying on my back on a rock as somehow slacking off, avoiding dealing with the facts of life. What a fool I was. The natural world is the real world, and the rest is what I do so I can spend my real life enjoying it. Deadlines arrive, mortgage payments are due, appointments are made, and all must be dealt with, but they shouldn't be confused with the fact of a river, the reality of an owl hoot, the truth of a sunrise.

Our constructed world is too much with us, more than Wordsworth could have imagined two centuries ago, and it's not always easy to keep it in its place. Nature is always there, though, offering joy and solace when we're ready.

The trail passed from the marsh into an area of Chickasaw plum thickets and scrubby sweetgums. A flickering ahead turned into a Blue-winged Warbler, another early fall migrant. This was the solace I'd come here for. The first whine of a Blue-gray Gnatcatcher in spring, the first stuttering *did-it* of a Ruby-crowned Kinglet in fall, the first Bald Eagle returning to winter in a riverside oak—all of these are reminders that the earth has circled the sun one more time and its great, marvelous, unfathomably intricate plan still works. The gears turn, the seasons change, the flowers bloom and the chrysalises burst and the birds nest and raise their young and come and go on journeys whose mysteries are beyond our knowing, and the order, the beauty, the rightness of it all abides as a reassuring certainty to counterbalance human frailties and flaws.

Up ahead was another spot where I'd look out over the river, hoping to see some special bird heading south: a Willet maybe, or a Franklin's Gull, or a Forster's Tern. As I walked, a Downy Woodpecker whinnied from the woods nearby and a Tufted Titmouse scolded in its busybody way. A Belted Kingfisher rattled as it flew over, and a Red-winged Blackbird stopped on a branch above to watch me pass. The birds I see here in this park all the time. Everyday companions—and no less wonderful for that. I'd never appreciated them more. ■

ARTHUR MORRIS/BIRDS AS ART

"Like everyone else, I'm a sucker for redstarts, their beauty and acrobatics and anthropomorphized perky attitude. I could almost feel my blood pressure dropping."

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The Catbird Seat

THE PERFECT BIRD

by Pete Dunne

As one who made his appearance at the tail end of creation, I wasn't around when the folks in R&D designed birds. All in all, they did a splendid job, but despite their many achievements they failed in one stupendous regard: they failed to design the perfect bird.

Just in case creation is revisited, I'd like to submit the following characteristics, which taken in sum would make . . . the "Perfect Bird."

That's its common name. Easy to say; easy to remember. In Latin, it's the same: *Aves perfecta.*

It is the size of a turkey and has the wingspan of an eagle, the legs of a crane, the feet of a moorhen, and the talons of a Snowy Owl. It eats kudzu, zucchini, and feral cats, and has been known to prey on homeowners who fire up their lawnmowers before 7:00 A.M. on the weekend.

Its bill combines the shape of a Roseate Spoonbill, the pattern of an Atlantic Puffin, and the extended lower mandible of a Black Skimmer (except that it appears to be the upper mandible because the bill is crossed).

Of course, the Perfect Bird has a crest and a long, forked tail. It has the overall plumage pattern of a drake Wood Duck, but with golden ear tufts, azure eyes, the bill color of a Caspian Tern, the gorget of a Magnificent Hummingbird, the wing pattern of an Ivory-billed Woodpecker, cerulean upperparts, vermilion underparts, and the tail pattern of an American Redstart.

Its song is rich and varied, combining the quality of a Wood Thrush with the volume of a Screaming Piha. An accomplished mimic, it sings the entire songs of the world's most celebrated songbirds, plus all of Jimmy Buffett's songs, Fleetwood Mac's greatest hits, and "Layla," "Freebird," "Inagodadavida," "White Christmas," and "God Bless America" in stereo.

Between sets, for the sake of identification, it calls its name . . . loudly.

The Perfect Bird can outpace swifts in level flight, outstoop a Peregrine Falcon, outmaneuver swallows, hover, kite, and even backstroke. During migration, it flies in a diagnostic "P" (for "Perfect") formation.

Or it would, if and when enough birds could be mustered for a quorum. The Perfect Bird is extremely rare. Only you and birders who have Sir Galahad's blood running undiluted in their veins have ever seen one, and the bird is invisible to anyone whose life list exceeds your own.

The Perfect Bird is uncommonly shy. Most observers get little more than a tantalizing glimpse that makes them ache with longing for the rest of their lives—which, in most cases, are mercifully short. The burden of knowing that they have almost zero chance of ever seeing the perfect bird again drives many to suicide.

You, however, know that the Perfect Bird is vain and can be lured from cover by training your scope on the spot where the bird is hiding (designated, for your eyes only, by a fluorescent orange bull's eye superimposed over the foliage). Seeing its reflection in the objective lens, the Perfect Bird will approach to the minimum close focus of your scope and display.

Although the bird only appears just as you are about to give up the search, it will remain in perfect view until you go blind or decide to wander off and find a chickadee or titmouse.

Any sighting of this species requires thorough documentation, but the Perfect Bird submits its own Rare Bird Sighting report to the proper state records committee, complete with photographs of you with your arm around the bird and your wristwatch (showing the time and date) displayed prominently. The photographs are personally autographed by the Perfect Bird.

In case you're worried about the photographs ever being stale-dated by the well-considered decisions of classification and nomenclature committees, relax. The name will never be changed. The species will never be split. It will never be renamed the Common Perfect Bird, the Northern Perfect Bird, or the Cordilleran Perfect Bird. Its name will never be modified by so much as a hyphen.

The Perfect Bird is, by its nature, the Perfect Bird. Who's going to mess with perfection? ■

ILLUSTRATION BY JEFF SIPPLE

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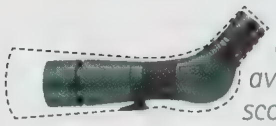

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LIVING BIRD

SPRING 2002 VOLUME 21 NUMBER 2

GREETINGS FROM SAPSUCKER WOODS

The Winter 2002 issue of *Living Bird* achieved a milestone of sorts. It not only drew more mail than any previous issue but more than we've ever received in an entire year. Maybe it was the invitation I extended in my "Greetings" column, asking readers to weigh in on whether it was appropriate to cover the Lab of Ornithology's non-bird-related research in this magazine. Or perhaps some of our topics and photographs were more controversial than usual.

Whatever prompted it, the floodgates opened, and we were inundated with letters, faxes, e-mails, and even a few phone calls. But the comments were not just about my whale article. Many readers said how much they appreciated the back-cover picture of a Snowy Owl in flight, with the World Trade Center towers looming dreamlike in the background. Others responded to the discussion of our Evolutionary Biology Program in the "Letters" section. And others wondered if it was possible to be unbiased in our scope review, since our big-day birding team is sponsored by one of the manufacturers.

We decided to delete "BirdNews" this time, so that we could publish more reader letters. Thank you for sending them. We appreciate and value your input. And in case you're wondering how our letter writers sided on the whale-article-in-a-bird-magazine debate, we heard strong opinions from both sides, but about 60 percent said we should stick with birds.

Tim Gallagher
Editor-in-Chief

8 AN ORNITHOLOGIST'S LIFE *by Stanley A. Temple*
Former Lab of Ornithology director Olin Sewall Pettingill, Jr., passed away in December, but his contributions to the study of birds live on.

12 SOARING SPIRIT OF THE ANDES *by Tui De Roy*
Searching for condors in the land of the Incas.

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Across North America, small observatories and banding stations are gathering vital information on bird populations and educating the public about the needs of birds.

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Water is the thread that binds the birds of the Mono Lake Basin.

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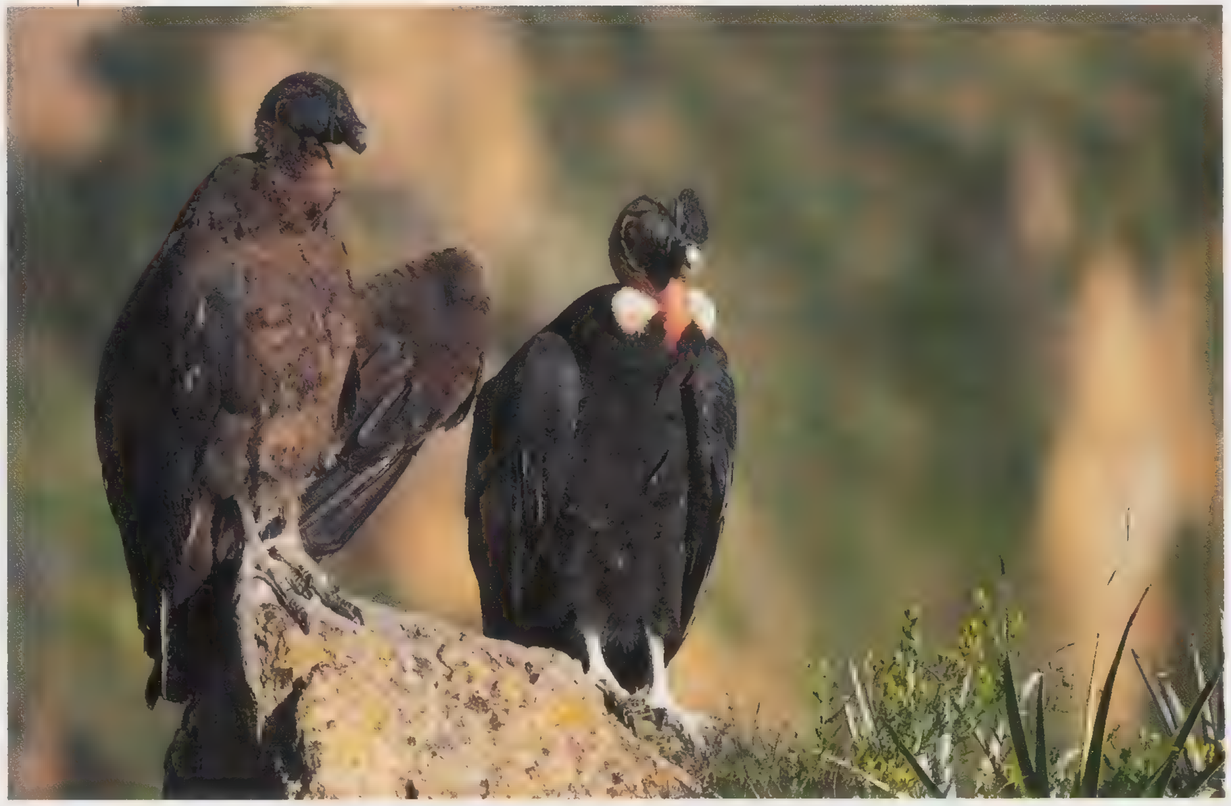

Cover: A Great Egret displays its spectacular plumes during courtship. Learn how to take perfectly exposed pictures of white birds like this in our "Picture Perfect" column on page 40. Photograph by Bobby Harrison.

Right: A juvenile (left) and an adult Andean Condor perch on a cliffside in Peru, waiting for thermal updrafts to carry them skyward. See article on page 12. Photograph by Tui De Roy.

Back Cover: Andean Condors, the largest flying birds on earth, soar effortlessly above Colca Canyon in Peru. See page 12. Photograph by Tui De Roy.

Letters

JOANN S. BOWES

JAILBIRD

Thank you so much for Kevin McGowan's "Picture Perfect" column ("Snap Judgments") in the Autumn 2001 issue. For some reason, I just got around to reading it this past week and tried out his suggestions when I went to the medium-security facility at Allenwood, Pennsylvania, to view the Snowy Owl that had taken up residence inside the prison's fences. Six of us went, and one other person had also read the article, so we helped each other follow Kevin's suggestions. Without that article, I woudn't have been able to get this picture. I used my Olympus D340R and a colleague's scope. The owl was about 40 yards away.

JoAnn S. Bowes
Loch Haven, Pennsylvania

STICK TO BIRDS

Tim Gallagher invited comments if we felt strongly about the whale article ("The Bowheads of Barrow") in the Winter 2002 issue of *Living Bird.* Well, I do. I have been a Lab member for quite a few years now, and I look forward to reading *Living Bird* each quarter. I would appreciate it if you'd stick more closely to birds and their diverse but closely related issues. Don't get me wrong. I care about those whales, but that is why I'm also a member of the National Wildlife Federation, The Nature Conservancy, and several other organizations not specifically focused on birds. My starting point in nature is birds. I'm an active Audubon and American Birding Association member. While my interest in nature is certainly wider than only my interest in birding, I come to *Living Bird*, a publication of the Cornell Lab of *Ornithology*, expecting from its name and its source that it will adhere to its stated subject.

I expect lots of people will write to say they appreciate the article. Lots of us care about whales. The question is not if the subject is of interest or worthy but whether this magazine is its rightful place. I'd like you to publish that whale material elsewhere and in *Living Bird* stick to our fine avian friends, their habitat, their health, etc. Or maybe you could start up a new publication called *Living Whale* or *Living Animal.*

Jackie Gribble
Columbus, Ohio

TIM GALLAGHER

Yes, Tim, I do have serious objections to your devoting almost 20 percent of the winter issue of *Living Bird* to a story about whales. Your publication is one of very few that covers birds in a way that is both scientifically accurate and easily understood by the layman. There is no doubt that studying whales is very important, and I support such efforts. However, I do not want to see *Living Bird* go the way of some other magazines, in which one often must look at the ads to see anything about birds. Please keep the focus on BIRDS!

Reece Mitchell
Hendersonville, North Carolina

OTHER VIEWS

I have been an out-of-doors person for over 60 years and a birder for 48 of those years. Yes, birds did come first, however, it did not take me long to appreciate the other parts of nature. While we watched birds migrate at night across the moon with our homemade telescope, we glimpsed the rings of Saturn, the redness of Mars, and the wonder of the Pleiades. Out in the woods, we found remnants of old chestnut trees, a bee tree, and we observed hundreds of monarch butterflies winging their way south. We also saw dolphins at the beach, the desert of southeast Arizona, and the wonders in our own backyard.

Diversity is the key. I still get excited about watching birds every day, and the rest just seems to fall into place. So keep up the nonbird articles. Learning never seems to go out of style.

Tom Igou
Huntington, West Virginia

Thanks for the fascinating account of bowhead whale research at Barrow. It is well written and shows an important facet of human behavior to which birders need exposure. We tend to ignore the important social value of subsistence hunting for Native Americans, and your article presents an understanding of how they use it to maintain their culture in the face of "progress."

I've been to Barrow, albeit during warmer weather than your stay. At that time the Inupiats were shooting male King Eiders as they were leaving the tundra to molt at sea. As a birder, it was a negative experience for me, but I didn't feel right about putting my values on these people. I now appreciate how few hunters there were compared with the number of ducks that flew past and that they have to hunt during the short period when the ducks come through. Your article helped me work through my feelings.

Chuck Trost
Pocatello, Idaho

FULL DISCLOSURE

As more and more companies and institutions find full disclosure to be the right thing to do, I urge the Lab to follow this practice as well. In the Winter 2002 issue of *Living Bird*, I read with interest the "Scoping for Optics" article by Ken Rosenberg. But my years of auditing experience raised a red flag due to the prominence given to the photographs of Swarovski scopes. Red flags indicate further information is necessary.

There was the large photograph of Rosenberg with the new ATS 65 at the beginning of the article and a photo of the AT80 HD on the third page of the article. Although the Leica Televid 77mm APO scope was also judged a standout, there was no picture of it. I also noticed that Swarovski had a full-page ad for the ATS 65 on the inside front cover.

From experience, I know Swarovski makes excellent scopes. But I also know that the company sponsors the Lab of Ornithology's big-day team during New Jersey's World Series of Birding, advertises in *Living Bird*, and contributes dollars and merchandise in other ways to the Lab and its programs. I am certainly not accusing the Lab of journalistic malfeasance. But I think it would have been appropriate to disclose the fact that some of the companies contribute to the Lab, whether or not their contributions affected the ratings, and whether a draft of the article was provided to any companies before it was printed.

Keep up the good work. I liked "The Bowheads of Barrow."

Don Gorney
Indianapolis, Indiana

KEY RAPTORS

Thank you for printing Beth Davidow's article highlighting the work of the Florida Keys Raptor Migration Project ("Falcons of the Florida Keys," Autumn 2001). This long-term, conservation-oriented research project owes its success to strong partnerships with several state agencies, private foundations, and nongovernmental organizations. HawkWatch International would like to gratefully acknowledge the long-term financial support of the project by the Florida Fish and Wildlife Conservation Commission, whose funding fills a major geographic void in raptor monitoring efforts and helps to provide high-quality data to assess the population status of raptors, particularly the Peregrine Falcon, across eastern and central North America. Additional short-term financial support has come from the Elizabeth Ordway Dunn Foundation and the Disney Wildlife Conservation Foundation. HawkWatch would also like to thank the Florida State Park Service staff and management at Curry Hammock State Park and Audubon of Florida for logistical support.

DOUG WECHSLER/VIREO

Casey Lott
Project Director
Florida Keys Raptor Migration Project
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We welcome letters from readers. Write to The Editors, *Living Bird*, 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

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SPRING 2002 VOLUME 21 NUMBER 2

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Spotlight

A SAFE HARBOR FOR THE ARK

by David S. Wilcove

Working together with landowners to restore habitat for threatened birds

I've never met Dougald McCormick, but if we ever got together I suspect we might not see eye to eye on a lot of things. McCormick and his family own almost 5,000 acres of forested land in the Sandhills of North Carolina, land that is prime habitat for Red-cockaded Woodpeckers. He is keenly aware that these endangered birds are present on his property, as evidenced by the license plate on his blue truck, which reads "I EAT RCWS." Say what you will about McCormick's sense of humor, he and his neighbors hold the fate of the Sandhills' Red-cockaded Woodpecker population in their hands. There simply aren't enough acres of state or federal land in the region to sustain a viable population of the birds. Private landowners, who own some of the best remaining woodpecker habitat, are the only ones who can make up the shortfall. And unless they are willing to step up to the plate and participate in conservation programs, the Red-cockaded Woodpecker will probably disappear from the Sandhills, as it already has from most of the southeastern United States.

The Red-cockaded Woodpecker is not unique in this regard. By one estimate, more than half of America's endangered species have more than 80 percent of their habitats on privately owned lands. For better or worse, the conservation of endangered species in the United States is largely (but not exclusively) a debate about the management of private lands.

Since 1973, the primary tool for protecting these species has been the Endangered Species Act, which prohibits private landowners from engaging in any activities on their property that harm endangered animals (endangered plants, alas, get less protection, but that's another story). This prohibition against harm has come to the rescue of numerous species over the past three decades, forcing landowners and developers to redesign projects, modify construction plans, or otherwise seek to mitigate the impacts of their activities on protected species. But the law had one apparent defect: it discouraged landowners from undertaking activities that might attract endangered species to their property. Landowners who might otherwise participate in conservation efforts were dissuaded by the fear that, should an endangered species show up on their property, the U.S. Fish and Wildlife Service (USFWS) would have some regulatory control over the use of their land. At its most extreme, this fear of regulation prompted some landowners to cut down their pine forests before the trees became old enough to attract Red-cockaded Woodpeckers. And in the Central Valley of California, a few farmers are allegedly plowing fields they would rather have left fallow to make sure that endangered kangaroo rats won't see anything to their liking and move onto their farms.

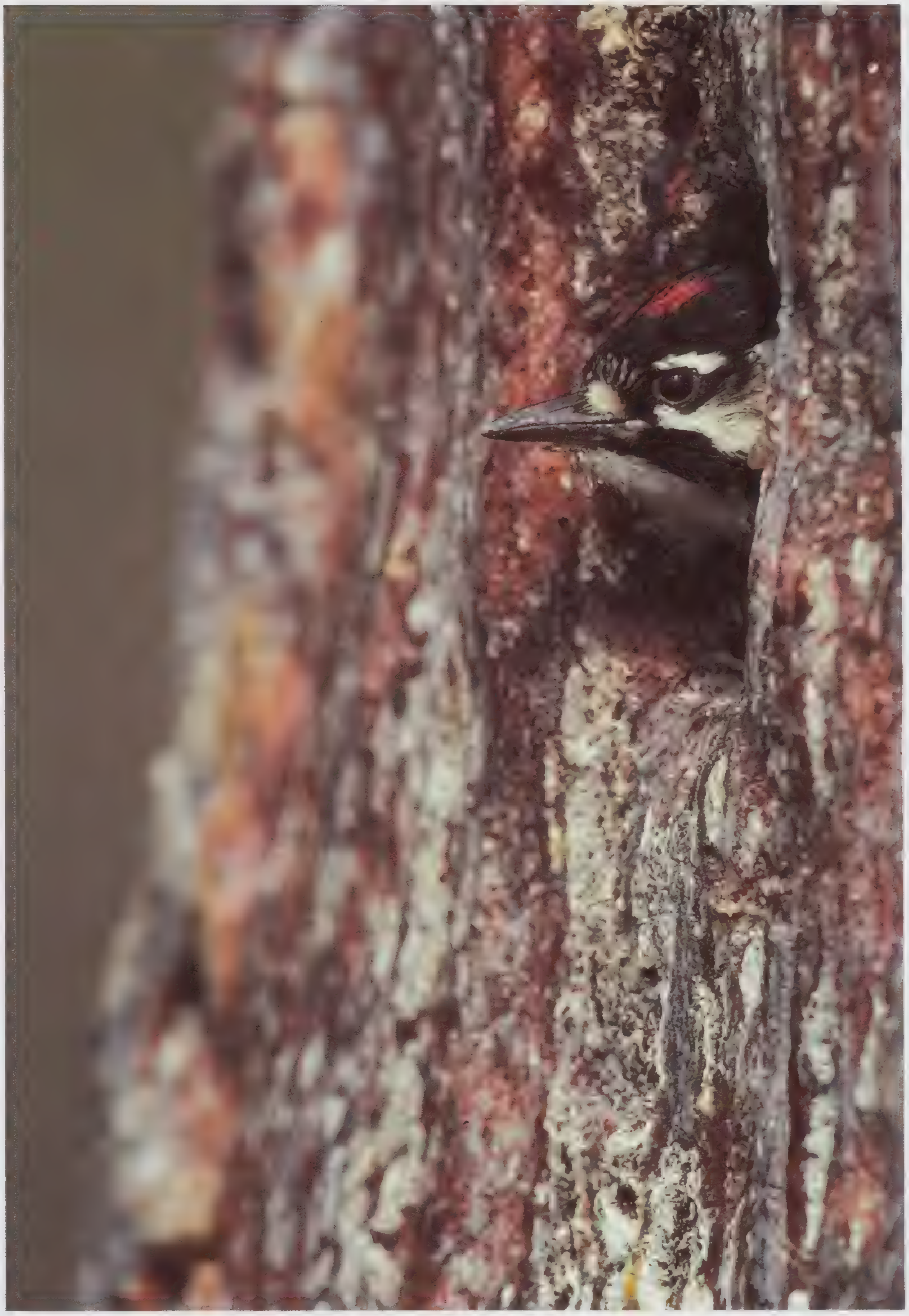
Few environmentalists were paying much attention to these developments or listening to the concerns of the landowners. Three who did were Michael Bean, Robert Bonnie, and Melinda Taylor from Environmental Defense (formerly the Environmental Defense Fund). In 1994, they convinced the USFWS to implement a trial program in the Sandhills called Safe Harbor. Under Safe Harbor, landowners make a commitment to restoring habitat for an endangered species on their property (something they are under no legal obligation to do). In return, the USFWS guarantees the landowners that if they ever change their minds, they will be allowed to do what they want with the restored habitat, notwithstanding the fact that it may then harbor an endangered species. Safe Harbor, in other words, enables landowners to help endangered species without the fear of incurring new regulatory burdens. It does not apply to endangered species that are already present on the property, which continue to receive the full protection of the law.

The response from landowners in the Sandhills was extraordinary. Fifty-five landowners have enrolled more than 36,000 acres in the program to help the Red-cockaded Woodpecker. Participants include the owners of golf courses, horse farms, quail plantations, and residential lots. In collaboration with state and federal wildlife experts, they are restoring pine forests to the open, parklike conditions favored by the woodpeckers through a combination of prescribed burning, removal of encroaching hardwoods, and the placement of artificial nesting cavities in existing pine stands.

If the strength of an idea can be measured by how quickly it spreads, then Safe Harbor, for all its simplicity, comes close to being Herculean. Shortly after the Sandhills program was launched, The Peregrine Fund initiated a Safe Harbor program for the benefit of the Aplomado Falcon. Once an uncommon resident in the southwestern borderlands, the Aplomado Falcon had essentially disappeared from the United States by the 1940s for reasons that remain uncertain (brush encroachment on the grasslands, agricultural development, and pesticides are likely culprits). For a number of years, The Peregrine Fund had tried to interest South Texas ranchers in reintroducing falcons to their property, but the ranchers were reluctant to participate. Once the Safe Harbor policy was instituted, however, their reluctance vanished, and thanks to the good work of the ranchers and The Peregrine Fund, more than a dozen pairs of Aplomado Falcons are now nesting on ranches in the Lone Star State.

As more landowners enrolled their property in Safe Harbor programs, interest grew. To date, more than two million acres of privately owned land have been enrolled in various Safe Harbor programs, benefiting a wide array of imperiled animals, including Black-capped Vireos, San Joaquin kit foxes, desert pupfish, Gila topminnows, Attwater's Greater Prairie-Chickens, and Golden-cheeked Warblers.

It's easy to dismiss Safe Harbor as little more than a temporary fix—the landowners, after all, have the right to undo their good deeds—but to do so misses the point. Safe Harbor buys desperately needed time for endangered species by increasing the amount of habitat available to them. Many of the landowners enrolled in the program have no intention of undoing the habitat improvements they have made, but they are nonetheless unwilling to encumber themselves or their heirs with the regulatory burdens associated with endangered species. Moreover, it's always possible that the landowner will decide eventually to protect the restored habitat in perpetuity, perhaps by selling the land or the development rights to a conservation group. A final benefit of Safe Harbor is impossible to measure but critically important nonetheless: it reduces the level of mistrust among landowners, environmentalists, and regulators.


DERRICK HAMRICK

Thanks to the Safe Harbor program, 36,000 acres of private land in the North Carolina Sandhills will be restored and, at least for a time, provide vital habitat for the Red-cockaded Woodpecker (above).

I suspect we will always need a strong Endangered Species Act to ensure that the last scraps of habitat for our rarest species are not destroyed. But if we wish to do more than hold the line on further losses—if we want to rebuild populations of endangered species—then the traditional adversarial approach won't do. What we will need are more initiatives like Safe Harbor that help to make private landowners willing participants in conservation efforts. If you don't believe me, ask Dougald McCormick. He's already enrolled his property in the Sandhills Safe Harbor program. ■

Suggested Reading

Williams, Ted. Finding safe harbor. *Audubon.* January-February, 1996.

AN ORNITHOLOGIST'S LIFE

Former Lab of Ornithology director Olin Sewall Pettingill, Jr., passed away in December, but his contributions to the study of birds live on

BY STANLEY A. TEMPLE

From the 1920s through the 1950s, Arthur A. Allen's "Grad Lab" at Cornell University turned out many of the leaders in the fledgling field of professional ornithology. Among them were John T. Emlen (a standard-setting avian ecologist), Herbert Friedmann (author of the definitive *Birds of North and Middle America*), Peter Paul Kellogg (a pioneer in bioacoustics and founder of the Library of Natural Sounds), George Misch Sutton (distinguished bird artist, field researcher, and writer), and more than 100 others who all left their own unique marks on the field. The pioneering generation of professional ornithologists who graduated before 1940 has now dwindled to a few survivors, and on December 11, 2001, one of Doc Allen's most illustrious protégés, Olin Sewall Pettingill, Jr., passed away at the age of 94. Sewall Pettingill's life story—which he recounted in his engaging 1992 autobiography, *My Way to Ornithology*—reveals a devotion to the study of birds and a passion for bird watching that embody his mentor's vision of a productive synergy between the two.

As is often the case, the passion for bird watching came first. Growing up in New England (and no one who met Pettingill would have ever mistaken his roots), he was introduced to the pleasures of natural history as a child by reading Thornton W. Burgess's daily "Bedtime Stories" about wildlife in *The Boston Herald*. Stirred by *The Burgess Bird Book for Children* (with illustrations by Louis Agassiz Fuertes) and encouraged by a grade school teacher, Sewall began watching birds seriously. He became a junior member of the National Association of Audubon Societies (later the National Audubon Society) and an avid reader of its journal, *Bird-Lore*, which featured articles for young birders written by Arthur Allen. By the time he was in eighth grade, Sewall had found one of his life's passions in birds and the other in Eleanor Rice, whom he would eventually marry.

As an undergraduate at Bowdoin College, Pettingill's interest in birds was redirected toward the scientific study of ornithology by Alfred O. Gross, his biology professor and a well-known ornithologist. Pettingill accompanied Gross and his childhood inspiration, Thornton Burgess, on a trip to Martha's Vineyard to census and film the nearly extinct Heath Hen. The experience solidified his interest in studying and photographing birds. His account of the visit, published in *Field and Stream*, was the first example of what would become a career-defining style of writing, aimed at the naturalist or bird watcher and based on easily understood interpretations of solid scientific field work.

During the summer of 1928, he accompanied Gross to the University of Michigan's Biological Station and undertook his first scientific investigation, a life history study of the Hermit Thrush (his first choice of a subject had been the American Woodcock, too challenging for a beginner but eventually the subject of his doctoral thesis). After his first taste of independent field research, Pettingill was sure he wanted to become a professional ornithologist. But in 1930, the path to a career in ornithology was not at all well mapped. Arthur Allen's graduate program at Cornell was growing, and his "Laboratory of Ornithology"—at the time little more than a name on Allen's letterhead—was *the* place to do graduate work. Allen accepted Pettingill into his "Grad Lab" and welcomed him to the Cornell campus along with another new-but-older student, George Misch Sutton, already a highly regarded bird artist and naturalist. Pettingill and Sutton roomed together in the home of Louis Agassiz Fuertes's widow and became lifelong friends. Sewall left Cornell in 1934 with a Ph.D. in ornithology, a new bride (Eleanor), and no prospects of a career. At that time there had been fewer than 30 Ph.D.s granted in ornithology in the United States (16 were from Cornell), and jobs were few. After presenting a paper on his woodcock work at the 1934 meeting of the American Ornithologists' Union, Pettingill took a short-term job with the Massachusetts Department of Education. There he hosted a radio show, "The Study of Ornithology," through which he promoted the idea that amateur bird watchers could make significant contributions to the scientific study of birds.

DICK FRANK

Famed ornithologist and former Lab director Olin Sewall Pettingill, Jr., poses beside a lake in Maine. Although he spent many of his retirement years in Texas, he always felt a deep fondness for his home state.

Pettingill's first real job was as a biology instructor at Westbrook Junior College in Maine, but during summers he taught ornithology to naturalists at the New Hampshire Nature Camp, using the newly published *Field Guide to Birds* by Roger Tory Peterson. His book on the American Woodcock was finally published in 1936, and he accepted a faculty position at Carleton College in Northfield, Minnesota. During his years at Carleton, Pettingill established his reputation as an outstanding teacher of ornithology and a very effective promoter of popular interest in birds. His *Laboratory and Field Manual of Ornithology*, first published in 1939 and still in print, became the standard reference book for the growing number of college-level ornithology courses, including Doc Allen's course at Cornell. From 1938 through 1973, he returned each summer to teach ornithology at the University of Michigan Biological Station, where he had first decided to become an ornithologist.

Through the 1950s and '60s he also used his skills as a public speaker and nature photographer to promote popular ornithology through his participation in the highly regarded Audubon Screen Tours. He developed a spe-

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GEORGE L. WETZEL

cial skill at communicating the results of research to the public. I first met Sewall when I was in junior high school, at one of his Screen Tour lectures about the Falkland Islands. Like thousands of others, I was spellbound by his fascinating presentation as well as by the many popular articles he wrote for *Audubon* magazine. And like many bird watchers in those days, I found the great birding hot spots by following Pettingill's *Guide to Bird Finding East of the Mississippi* and *The Bird Watchers' America*, the first of a new genre of bird-finding guides he pioneered.

In 1960, Sewall became Arthur Allen's successor as director of the Lab of Ornithology, which had become a thriving academic institution based at Sapsucker Woods. It was a perfect match. Both the man and the institution he directed were dedicated to advancing amateur and professional ornithology and to forging productive links between them. My path crossed Sewall's again from 1964 to 1972, when I was a student at Cornell. Most students' initial impression of Pettingill was of a no-nonsense academician (with a hint of "down-east" aloofness) in a coat (usually tweed) and tie (often bow) smoking a pipe. But Sewall's directorial demeanor at the Lab belied his warm, generous nature. I remember well how special I felt as a lowly freshman to be invited to his home, and how gracious he and Eleanor always were to us students. I wish I had been fortunate enough to learn ornithology from this master teacher, but at Cornell he was a busy administrator, lecturer, and writer. His teaching was limited to summer ornithology courses in Michigan.

"Most students' initial impression of Pettingill was of a no-nonsense academician in a coat and tie, often smoking a pipe. But Sewall's directorial demeanor at the Lab belied his warm, generous nature. I remember how special I felt as a lowly freshman to be invited to his home, and how gracious he and Eleanor always were to us students."

The Lab prospered under his directorship, and much of the Lab's special niche in American ornithology can be traced back to Pettingill's innovative approaches to linking professionals and amateurs. He initiated and edited *The Living Bird*, a unique annual publication that was valued by professionals and amateurs alike. It eventually evolved into the award-winning quarterly you are now reading. He kept members informed of Lab activities through a newsletter that today is *Birdscope.* He designed, edited, and largely wrote *Seminars in Ornithology: A Home Study Course in Bird Biology* through which hundreds of amateurs learned about the science of ornithology. (This remarkable course was recently rewritten, updated, and expanded.) He gave serious birders a way to become involved in systematic data collection by inviting them to participate in the North American Nest-Record Card Program and the Colonial Bird Register, both centered at the Lab. These programs eventually evolved into today's diverse citizen-science programs, which attract thousands of participants. He launched the Arthur A. Allen Award, which recognizes ornithologists whose achievements parallel the ideals exemplified by Allen. By the time he retired in 1973, Pettingill had instilled in the Lab of Ornithology a clear sense of its enduring mission, linking professional and amateur ornithologists through productive partnerships.

For his significant contributions to ornithology, Sewall received many honors, among them the Arthur A. Allen Award from the Lab, the Ludlow Griscom Award from the American Birding Association, and the Eugene Eisenmann Medal from the Linnaean Society of New York. Each of these awards recognized his excellence in ornithology and his enthusiastic encouragement of amateurs to learn more about birds.

When Alfred Gross heard his former student's radio program on bird study in 1934, he wrote prophetically: "Your words were well chosen, and you put it over perfectly. Your thought of using bird study to fill the leisure time which the masses are destined to have is a superb and original idea." I can think of no better way to describe Sewall Pettingill's contributions to American ornithology, and especially to the Cornell Laboratory of Ornithology. ■

Stanley A. Temple is the Beers-Bascom Professor in Conservation at the University of Wisconsin–Madison and a long-time member of the Lab of Ornithology's administrative board.

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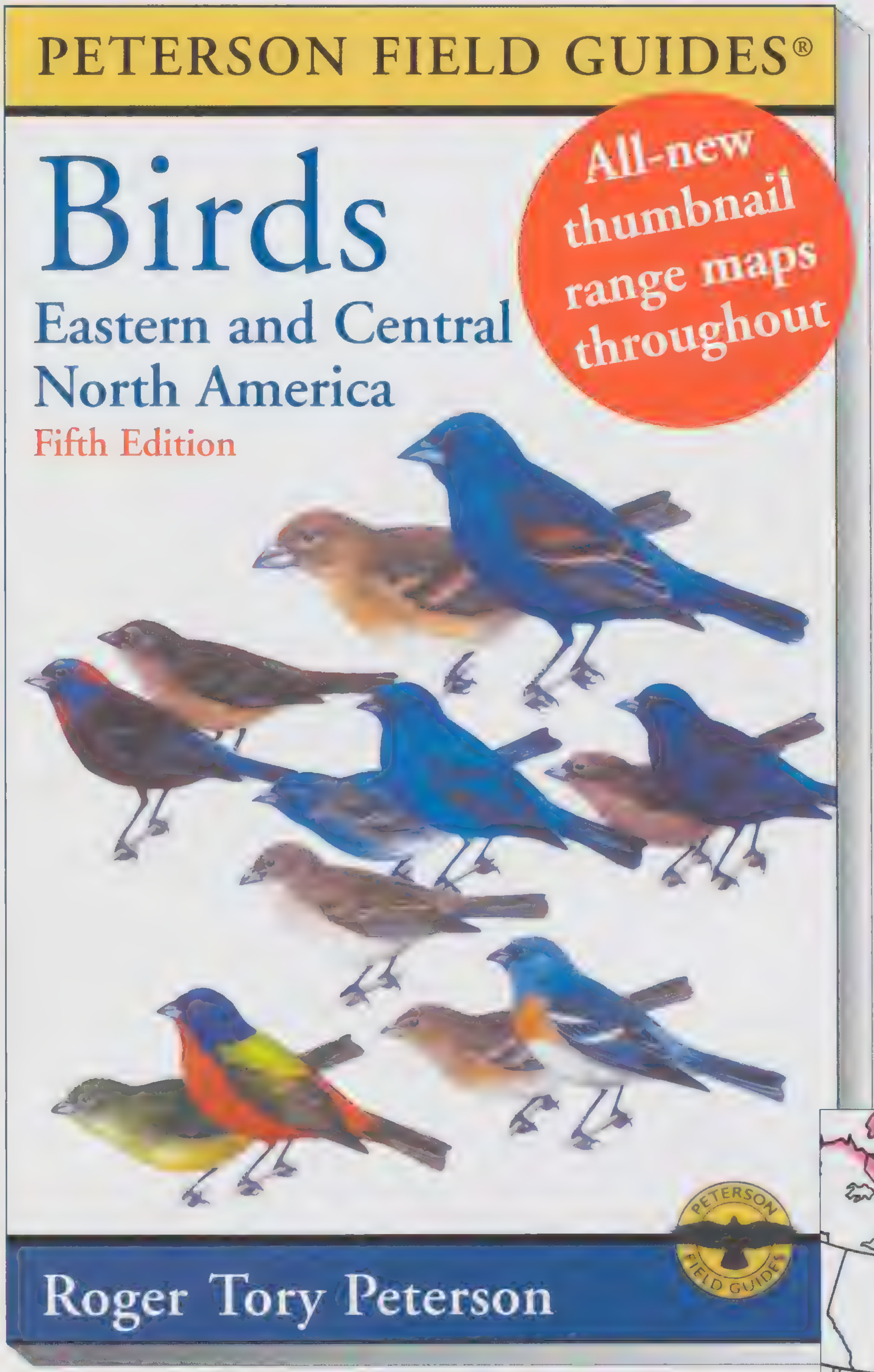

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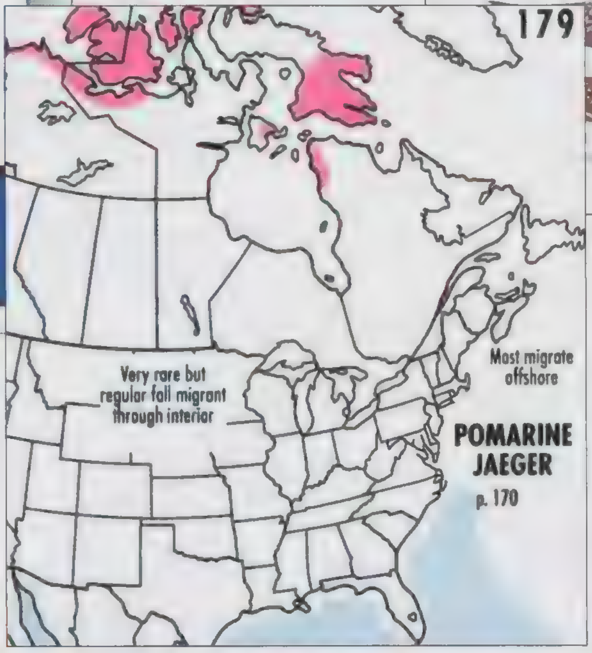

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Soaring Spirit of the Andes

Text and photographs by Tui De Roy

Searching for condors in the land of the Incas

The sun has just risen over the frosty brim of the Colca Canyon, which drops a dizzying 4,000 feet beneath my rocky perch. I'm 14,000 feet above sea level, high in the Andes of southern Peru. As the golden rays begin to slant into this breathtaking chasm, a tiny black-and-white speck appears far below, circling, growing in size as it approaches. An Andean Condor *(Vultur gryphus)* is ascending on the first of the thermal air currents set in motion by the sun's intensifying warmth.

Within minutes I am staring into the eye of the world's largest flying bird as it passes not 15 feet in front of me, its 10 1/2-foot wingspan supporting a massive 30-pound body. A majestic adult male, he banks sharply and returns, white patches flashing on broad black wings, fluffy white ruff pulled snugly over his featherless rosy neck to ward off the high-altitude chill. Adjusting his flight imperceptibly, he veers for an even closer pass. His splayed wingtips slice through the air sounding like a storm whistling through the rigging of a sailing ship. Regal in his slow, steady flight, he eyes me with a mixture of curiosity and confidence, his fleshy male crest flapping in the breeze as he turns his head. Behind him the canyon walls rise another 7,000 feet to snow-clad volcanic peaks. This vertical landscape is

An adult male Andean Condor (left) soars on a thermal updraft at Peru's Colca Canyon. With a 30-pound body and a 10 1/2-foot wingspan, this is the world's largest flying bird.

A juvenile Andean Condor holds its wings spread to soak up the warmth of the early morning sunlight.

his domain, and he seems to know it. From mountaintop to roaring river, the Colca Canyon is an almost sheer 11,000 feet deep, nearly twice the depth of the Grand Canyon.

Most of my life I have been waiting for an encounter like this, ever since my first distant sighting of an Andean Condor circling above a lofty, ice-clad volcano in Ecuador. Though only a speck in the sky, this legendary South American bird ignited my imagination. In the intervening decades I pursued all the information I could but found surprisingly little.

For centuries the condor has been revered by ancient Andean civilizations, appearing prominently on pottery, in stone sculptures, and even as a gigantic figure etched into the desert surface of Peru's Nazca Plains. Today the giant bird is featured on the coat of arms of no fewer than four Andean countries—Colombia, Ecuador, Bolivia, and Chile—and it surfaces repeatedly in everyday life, in forms ranging from an airline logo to a syndicated comic strip. Yet precious little is known about the bird itself, except that its numbers are dropping alarmingly over many parts of its high mountain range, which historically extended down the full length of the continent.

At the time of the Spanish conquest, the Andean Condor's inspiring silhouette was a common sight from near the Caribbean coast of northern South America to the gale-ridden heights of Tierra del Fuego at the continent's southern tip, and also down the entire 4,500-mile-long Andes Cordillera, the longest mountain chain on earth. But because of habitat destruction, a diminishing supply of food, and relentless persecution, ever-enlarging blanks are appearing in the range of this species. The Andean Condor is all but gone from Venezuela, and in Colombia it has been reduced to one small natural population. Ecuador has an estimated total population of just 80 to 100 birds. Only Peru, Chile, and the most precipitous mountains of Argentina still hold densely populated pockets where this enigmatic bird is still found in significant numbers.

As the morning sun over the Colca grows warmer, more condors appear from the depths of the canyon. Today, 18 of them rise and fall in effortless circles, never flapping a wing but simply adjusting their feathers ever so slightly to harness the rising air currents. They chase each other around and play on the icy wind, rising ever higher toward the lofty snows. Dark juveniles dive-bomb each other in a mock dogfight, while two stately adults cruise back and forth in perfect synchrony within a wingspan of the cliff face, apparently courting in midair. The breeze picks up, suddenly giving the birds extra lift, and all of them disappear high in the sky. Where to? It's a mystery, as is most of the condor's life.

Andean Condors are formidable scavengers—the undertakers of the natural world, whose role is to clean up the carcass quickly wherever death strikes. They know their landscape intimately and turn up at the most unexpected places in time to find seasonal food supplies. One of the most startling sights in Peru is when these high-altitude birds come swooping low over the crashing waves along the country's sere desert coast, arriving at exactly the same time as the thousands of sleek South American sea lions that haul themselves out to give birth every December. To cash in on the afterbirths, the mighty birds must travel hundreds of miles from their high mountain homes, although no one knows the route they take, how they navigate, or what alerts them to the timing of the pupping season.

Obsessed with finding out all we could about the condors of Colca Canyon, my partner Mark Jones and I spent weeks exploring the region,

> *From mountaintop to roaring river, the Colca Canyon is an almost sheer 11,000 feet deep, nearly twice the depth of the Grand Canyon.*

asking everyone we met along the way to tell us their condor stories. The native Collagua people—whose ancestors have been cultivating the rugged canyon for at least 14 centuries, constructing extensive terraces and irrigation systems—were friendly and talkative. Whole families were busy harvesting monster potatoes with ox and plow, the women attractively dressed in elaborate traditional multilayered petticoats and exquisitely embroidered vests and hats. "Yes, the condors used to nest in all of the crags above our village, but not anymore," was a comment we heard again and again. "The children used to scramble up there and take the eggs. They were so hard they would roll all the way down without breaking."

A young, smiling Collagua Indian named Silverio Cutira Llallacachi told us that his family used to herd alpacas on the high plateau, where he personally knew of six different condor nest sites. For days we followed him under the searing Andean sun, crunching over wind-polished ice slopes or down stone staircases that mark ancestral trade routes interconnecting the various valleys. At sundown we would camp amid pillowlike mossy bogs, where nighttime temperatures drop to the single digits, or in red-rocked valleys, where frozen waterfalls glittered silently at sunrise. But we saw nothing of condors.

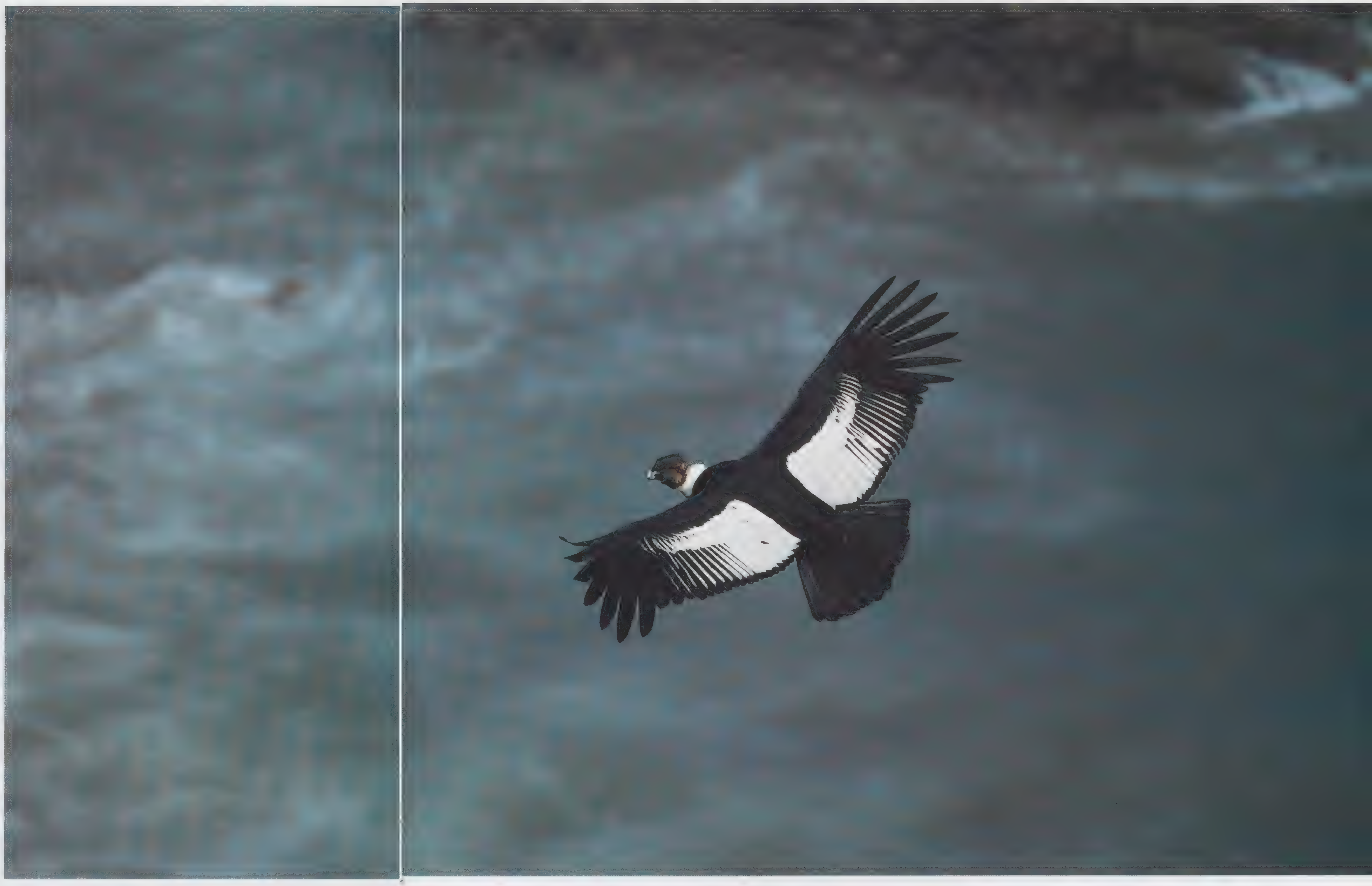
Silverio showed us perfect condor nesting sites at crag after crag: small deep caves on the faces of utterly vertical cliffs, with a guano-splattered perch to one side affording mind-boggling panoramas of the Andean ranges. But the ledges where the birds should have sat now harbored delicate plants, vivid testimony that no condor feet had stamped there for some time. One amazing cave—where Silverio claimed to have watched the nesting birds go—was within a stone's throw of the summit of legendary 18,044-foot-high El Mismi, whose perpetual snows give rise to the first trickle of meltwater that eventually grows into the mighty Amazon River.

Low down inside the canyon a few days later, Eduardo Mejia, a young Peruvian ornithologist studying the birds of the high Andes, took us to yet another nest, this one said by the locals to be in use every year at this time. Indeed, the copious whitewash around the cave entrance attested to frequent traffic. But because no condors were in sight, I decided to investigate more closely.

Donning harness and descenders, my climbing rope looped over a solid rock outcrop, I let myself slide over the lip of the canyon, the rushing waters of the river snaking 600 feet below me. Dangling like a spider, I carefully eased myself down level with the cave, then started swinging until I gained a foothold just inside its mouth. About 12 feet high at the entrance, it led back horizontally some 20 feet. Behind a large boulder was a triangle of flat ground five feet across, deeply littered with huge black feathers. The view of the canyon from here was classic: a patchwork of green barley fields and, oh-so-far below, little toylike cows scattered on either side of the cascading Colca River, all framed by overhanging volcanic rock. A strange musky smell hung in the air, more suggestive of a large mammal's lair than a bird's nest. Among the feathers on the nest floor I noticed some bones—not food remains but those of an adult condor. Had a condor died here while tending its chick, perhaps a victim of poisoning or shooting?

Looking closely, I saw plenty of guano overlaying the skeleton. No doubt this was a favored nesting cave used by generations of condors. In captivity the birds easily live 50 years or more and are among the longest lived of all terrestrial birds. With extremely low natural mortality in the wild, the birds probably need

Andean Condors are formidable scavengers—the undertakers of the natural world, whose role is to clean up the carcass quickly wherever death strikes.

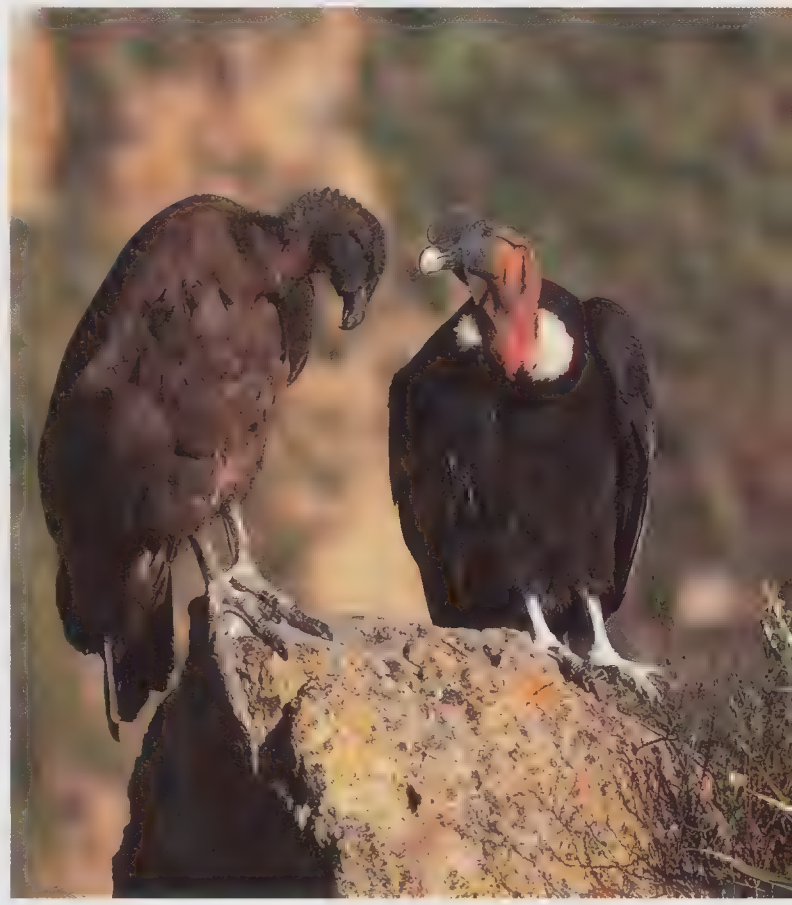


An adult male condor (above) flies along the coast, searching for marine mammal carcasses and other carrion.

to nest only rarely, and when they do, the whole cycle may take them considerably longer than a year. Just the incubation of that single huge egg takes nearly two months, and when the chick hatches it does not learn to fly until it is six months old. Even after that, both parents assist the drab-colored youngster by feeding it and accompanying it for many more months while it acquires the knowledge it needs to survive. It has to learn the lay of the land—where to find food, how to avoid danger—and, above all, it must perfect its flying skills through lengthy practice before it is ready to become independent. Not until age six will a young condor start changing from its murky brown feathers into the striking black-and-white plumage of an adult. Meanwhile, it must find its place in condor society, then establish a bond with what will probably be a lifelong mate before locating the perfect cave and raising its own first chick. But if just a few too many adults come to an untimely end, the cycle is broken as deaths outstrip hatchings, and the species' numbers begin to plummet.

Sobered by these thoughts, I climbed back up the cliff. As we continued our explorations, we found it hard to separate fact from myth as the tales we heard grew more extravagant. One day we learned of a special place 40 miles downriver where, we were told, the condors fly in from afar just to bathe. At the end of a long day's walk, we did find a spectacular waterfall plummeting thinly down a series of stairlike ledges high on the canyon wall. Scrambling up to these precarious perches, we found the most idyllic setting imaginable, where sparkling water cascaded from bowl to crystalline bowl, providing a plunging vista only mountain gods could dream of. Fresh condor droppings offered tangible proof that this account was real.

Other stories we heard were more far-fetched. "Condors push full-grown cows to their death off cliff edges," we were told. "They even carry away live sheep in their talons!" But a quick look at condor anatomy reveals that their feet are more like those of a turkey than a raptor, making them incapable of lifting even a rabbit. Still, the accusations persist, especially as condors have become increasingly dependent on man's free-ranging livestock for their survival. Wild game such as deer, vicuñas, and guanacos having long ago been drastically reduced in numbers through hunting, the carrion-eating condors must rely almost exclusively on the remains of domestic animals turned loose to graze in the mountains.



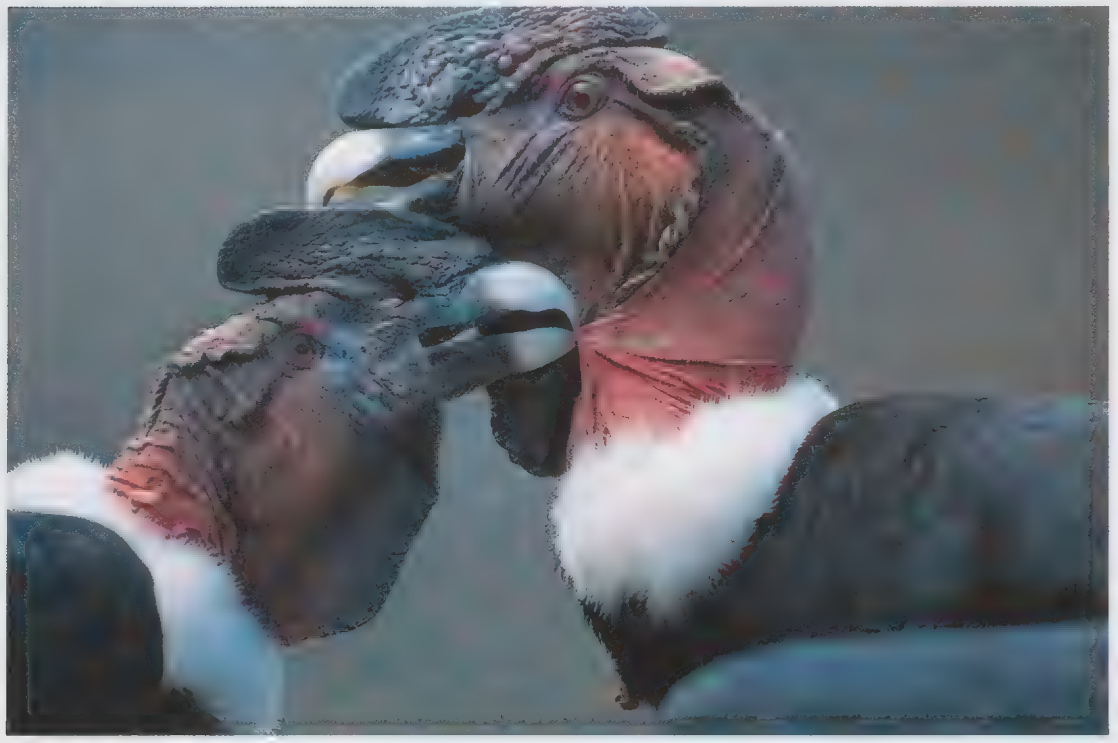
The rugged, remote country of Peru's Colca Canyon is ideal habitat for condors, and the birds have existed there for countless millennia. At left, two juvenile condors perch together above the 11,000-foot-deep chasm. Above, a side-by-side view of a juvenile (left) and an adult Andean Condor. These slow-maturing birds take six years to reach full adult plumage.

Walking over a high mountain pass one chilly sunset, we met an old man with a weather-beaten face driving his colorfully laden llama train to market. "We don't like the condors much because when they have young to feed they'll swoop right down on our baby alpacas and kill them," he told us. "In retaliation, some time ago the people of the nearby village set out a poisoned carcass and killed 25 condors in just one day."

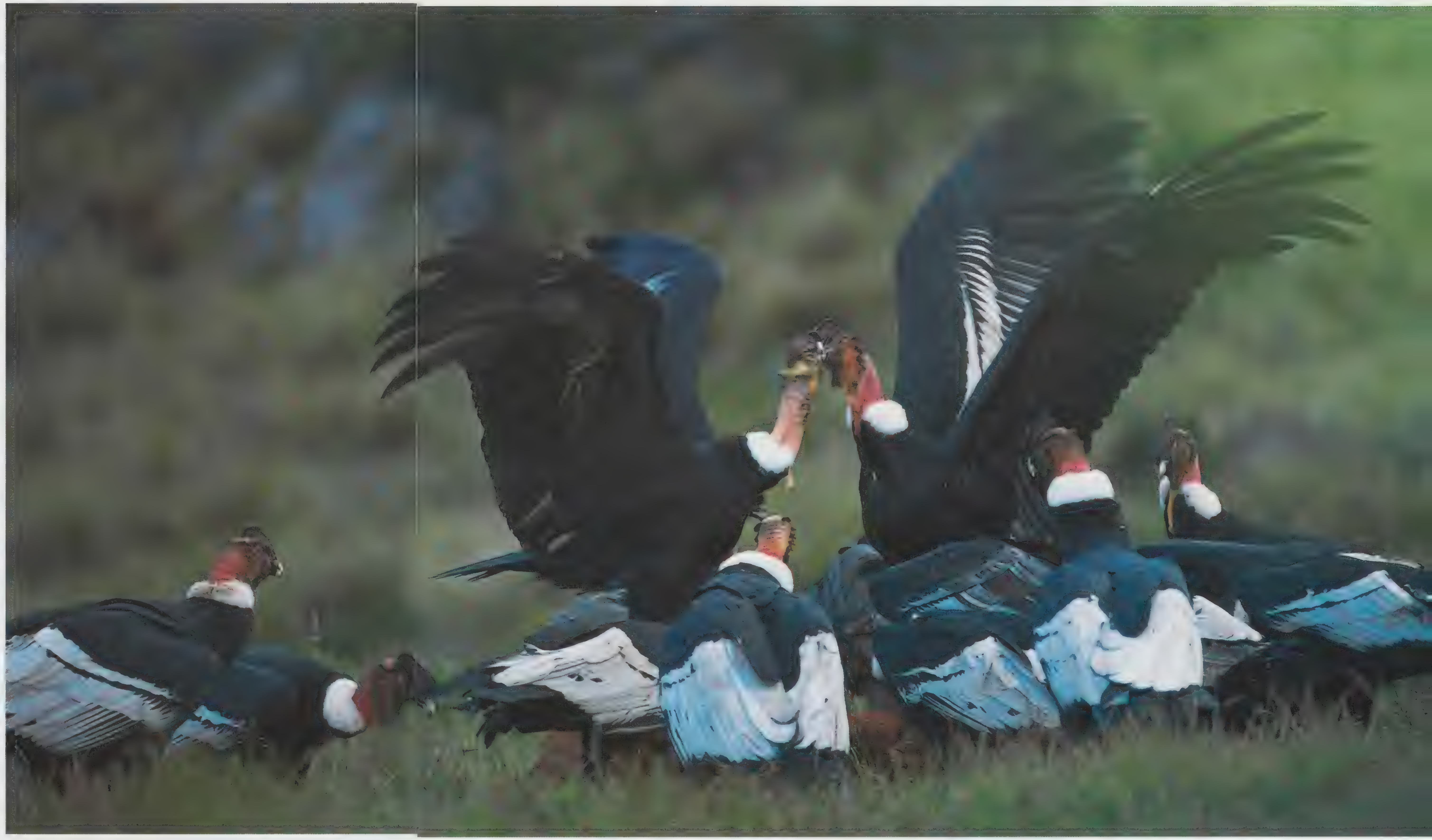
Whether these accusations are well founded or not is doubtful. Could these huge, intelligent birds really induce panicked cattle to throw themselves off a precipice by harassing them in low flight? Or are they simply so clever at finding a carcass immediately after the animal's death that its owner concludes that the condors killed it?

Winter was setting in as our stay in the Colca Canyon drew to a close, the summer rains having stopped many weeks before. Now the thin flush of grass on the high slopes where cattle grazed was fast shriveling up, marking the time for culling of old, unwanted horses and donkeys. Interested in seeing the condors feed, we constructed blinds near one carcass where we hoped we would go unnoticed by the birds. The condors' excellent vision and intimate knowledge of the landscape alert them to the slightest anomaly at enormous distances. "They are so incredibly astute, even if your blind looks like a perfect bush, they'll notice that it appeared suddenly where previously there was none," a young man told us.

Not to be outdone, we started our vigil crouching between miserably cold boulders, completely



MARK JONES



Andean Condors appear to have a complex social fabric. Above, two adult males nibble at each other while engaging in mutual preening. After many days of hiding in a blind beside a horse carcass, the author was rewarded by the sight of some 40 massive condors descending onto the carcass as one (at right).

invisible except for a few tiny peepholes in the dense shrubbery. Within hours of the carcass being left, the first condors appeared, circling high in the sky. More gathered quickly, perching on rocky ridges and crags within a quarter mile all around. Each day we returned before dawn and sat motionless in icy conditions until after dusk. Condor numbers grew until I could count 28 in my narrow field of view, with many more swooping low over my head. The eerie sound of the wind rushing through their flight feathers differed with each bird, some emitting a low treble sound, others a high whistle, and one a startling, sirenlike whine.

Far in the distance I could see the condors interacting around their favorite perches, revealing intriguing behavior that hinted at a complex social fabric. Two old males engaged in tender mutual preening. Two others seemed to be playing, nibbling each other's beaks and twining their necks together, even taking turns shoving their heads under one another's stomachs, pushing each other around. Some birds appeared to take pleasure in knocking others off their perches, while another adult male gave a subadult rival the benefit of a spectacular wings-out, head-down, chest-inflated display, although the nonchalant recipient remained utterly unimpressed.

Off to one side a pair was busy courting, the magnificent male's head flushing brilliant hues of orange and red as he strutted and nodded around the attentive female, occasionally cupping his outstretched wings forward and slowly pivoting in full circle. Then the two would fly off simultaneously, draw a few beautifully choreographed figure-eights in the sky, and land elsewhere, repeating the whole performance.

As I waited, one story we'd heard began to intrigue me more and more. According to local lore the condors have a leader, a very old male the natives referred to as the "Apu," which in the local language means "the wise one," a term sometimes used for mountain gods. We were told that no matter how hungry condors might be, they would not descend on a carcass until the Apu had decided it was safe.

The days passed and still we waited. An Andean gray fox made regular visits, carrying away food to a secret cache. A nervous Peruvian huemul doe, a rare species of Andean deer, walked by unsuspectingly. One night a large chunk of meat disappeared from the carcass, possibly the work of a mountain lion. But still the condors only watched. They didn't leave until the last light of dusk and returned each morning before the sun had risen.

Then, an hour before sunset on the fifth day, a stupendous male flew in and landed low on the slope above the carcass. Head held high, shoulders squared, feet planted far apart, his entire body language spoke of dominance, a great presence emanating from every feather. Suddenly electrified, I murmured to Mark, "If the Apu exists, I think I can see him right now."

For an hour he stood stock still, watching. Then, with daylight fading, the Apu walked deliberately down the slope. The scene that followed had me wondering if I was dreaming. Within five minutes every condor in sight flopped down to the ground behind him. The Apu leading the charge, some 40 condors marched determinedly through the tall tussock grass like an advancing army. They descended on the carcass as one, emitting strange hissing and thumping sounds of excitement. For the next 20 minutes they fed in a ravenous melee of black-and-white wings, the sounds of tearing hide and snapping cartilage filling the air. Then, all at once they took off, flapping heavily away into the gathering night. I felt as though I had gone back to prehistoric times, when Pleistocene mammals roamed the landscape in hordes, long before man came onto the scene, and squadrons of huge winged scavengers descended on their remains. ■

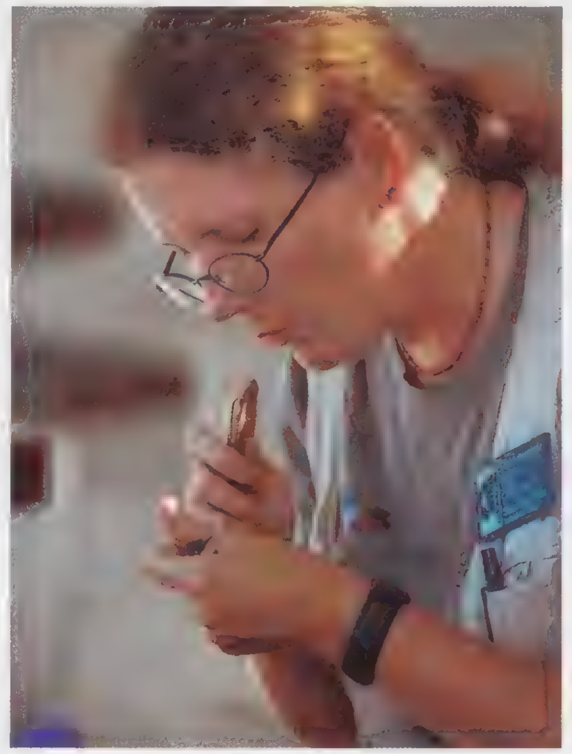
Tui De Roy is a freelance writer and photographer based in New Zealand. She and partner Mark Jones of Roving Tortoise Photography travel the world photographing natural habitats and wildlife. Visit their web site at <www.agpix.com/rovingtortoise>.

A Boom in Bird Observatories

BY KRISTI G. STREIFFERT

Across North America, small observatories and banding stations are gathering vital information on bird populations and also educating the public about the needs of birds

Ten people gather around the picnic table at Arizona's San Pedro National Riparian Conservation Area, leaning forward eagerly to get a closer look at the tiny hummingbird. Sheri Williamson, cofounder of the Southeastern Arizona Bird Observatory (SABO), holds the bird carefully in her hand. "See how a hummingbird's tongue runs in a loop over the top of its skull." The visitors gasp as she gently pushes the tiny bird's feathers aside with her finger to let them see its tongue, right through the translucent skin on its head.



This is a typical experience at many bird observatories, where freshly trapped birds are weighed, measured, banded, and then, just before being released, are often shown to a small group of visitors to help educate them about birds and their special needs. Although combining public education with research is a classic bird observatory activity, SABO has not been around long enough to become a "classic." It got started less than five years ago, making it part of an intriguing trend in North America, where bird observatories appear to be booming.

In the mid-1960s, only a handful of bird observatories existed in North America, including Long Point Bird Observatory in Ontario, Point Reyes Bird Observatory in California, Hawk Mountain Sanctuary in Pennsylvania, and several others. You could arguably include the Cornell Laboratory of Ornithology in this group, although as part of a major academic institution it differed in scope from the others. A few new observatories were launched in the late 1960s, 1970s, and 1980s, but the number of bird observatories didn't start really booming until the 1990s. New startups in that decade include the Alaska Bird Observatory (1991), Rouge River Bird Observatory in Michigan (1992), Chipper Woods Bird Observatory in Indiana (1996), Great Basin Bird Observatory in Nevada (1997), and many more.

TOM VEZO

Above, visitors at Cape May Bird Observatory learn about hawk migrations and see trapped raptors, such as this juvenile Cooper's Hawk. At left, Sheri Williamson of Southeastern Arizona Bird Observatory gently blows a hummingbird's head feathers aside so visitors can see its tongue through the translucent skin on its head.

TOM STREIFFERT

When asked why there are so many new bird observatories, Williamson points to the simple fact that more people are interested in birds and the environment than ever before. Others point to the remarkably successful program Partners in Flight, which has opened a myriad of avenues to funding for migratory bird research—and many bird observatories have been established as a direct response to new research opportunities.

C. J. Ralph, a Point Reyes Bird Observatory cofounder, lists nearly 150 bird observatories on the web pages he oversees at the Redwood Sciences Laboratory of the U.S. Forest Service at Humboldt State University <www.rsl.psw.fs.fed.us/pif/mnstalst.html>. That number is much higher than the 35 observatories listed by the Bird Banding Laboratory at Patuxent, Maryland <www.pwrc.usgs.gov/bbl/homepage/link.htm>.

Why the discrepancy? Well, with the increase in bird observatory numbers comes a somewhat befuddling question: just what is a bird observatory? Is the tiny seasonal bird-banding operation at Wekiva Basin Banding Station in Apopka, Florida, a "bird observatory" and as deserving of the name as the venerable Cape May Bird Observatory (CMBO)? According to Ralph's definition, yes—and it *is* listed on his web page. "Basically, a bird observatory is a station that regularly and systematically monitors bird populations," he says. Also, he adds, most of them trap and band land birds, or at least they started out that way. "Most, but not all, bird observatories have a mix of profes-

ARTHUR MORRIS/BIRDS AS ART (2)

At a hawk-banding demonstration at Cape May Bird Observatory, visitors get up-close views of a variety of raptors, such as the juvenile Cooper's Hawk (above) and the Merlin (at right).

sional and volunteer help, and many have a public education or outreach program. It can be a huge program like that of the Point Reyes Bird Observatory, or it can be a single banding station run by one person and a couple of friends once a week."

Other people (including Parks Small, the Florida state park employee who operates the "one-man" banding station at Wekiva Basin) see those small operations as merely "banding stations." Bird observatories, by some definitions, are more like nature centers, but with twin priorities of bird research and public outreach. This characterization results in a shorter list, but still there is a world of variety.

Some bird observatories own property and have a public office and even a visitor center. Others, such as the Southeastern Arizona Bird Observatory, don't have a physical location at all. Instead, SABO offers field trips and guided tours and opens its banding operation to the public.

Pete Dunne, sanctuary director of New Jersey's famed Cape May Bird Observatory, struggled with the definition of bird observatories in an article, "Bird Observatories: Regarding Their Scope," in the April 2000 issue of *Bird Conservation.* "What started as bird banding has really broadened in scope," says Dunne. "Although all bird observatories have a research link and nearly all have a link to people with education programs, they can differ greatly, based on the location and who is running the observatory. Some are focused very much on membership, some on research, and some are focused on educating people."

Manomet Center for Conservation Sciences, which started out as a banding station more than 30 years ago, now counts avian research as just one small part of a large conservation science program. Is it a bird observatory?

"Yes," says Dunne, "but in contrast, Cape May Bird Observatory has focused more and more on people, while Manomet evolved into an institution very focused on conservation research."

A number of reasons exist for the difference, he says. "Cape May is a crossroads for people and for birds. We have a huge tourist industry with a lengthy season and a richness in bird diversity, so we find ourselves focusing on those strengths."

Cape May Bird Observatory relies on several thousand members for support, whereas other observatories rely more on grants and government contracts. CMBO has more than 5,000 members, but Nevada's Great Basin Bird Observatory (GBBO), for example, receives support from fewer than 400. According to its director, Ted Floyd, GBBO is funded mostly through government grants and contracts. "We work closely with government agencies and help them monitor birds," he says. "I think federal

TOM VEZO

Cape May has long been famous for its high numbers of migrating raptors—Peregrine Falcons, Merlins, Sharp-shinned Hawks, Cooper's Hawks, and more—making it a perfect site for a bird observatory. Pete Dunne (above), sanctuary director at Cape May Bird Observatory, points out a high-flying raptor to a crowd at the hawk-watching platform.

agencies and groups such as Partners in Flight are keen on supporting the work of bird observatories. It's a great way for agencies like the U.S. Fish and Wildlife Service to get good work done, inexpensively."

Bird observatories engage in an amazing array of research projects, some on a national or even continental scale, others purely local. The Alaska Bird Observatory (ABO), for example, conducts point-counts for the National Park Service every June to examine the abundance of birds at Denali National Park, studies the nesting success of land birds exposed to intense jet noise near Eielson Air Force Base, and participates in numerous other projects. Great Basin Bird Observatory research projects include the Nevada Breeding Bird Atlas and a loon telemetry project.

Not all observatory projects focus exclusively on birds. The Black Swamp Bird Observatory, for example, has conducted small-mammal, reptile, and amphibian surveys in northwest Ohio, along with shorebird population surveys, raptor migration monitoring, and other large-scale programs.

The two most common far-reaching monitoring programs that bird observatories participate in are the North American Breeding Bird Survey (BBS) and Monitoring Avian Production and Survivorship (MAPS). Both programs seek to provide long-term, continentwide data on the population trends of hundreds of bird species. The BBS focuses on roadside surveys using 2,500 skilled amateur birders and professional biologists each year. MAPS traps birds at more than 500 banding stations in the United States and Canada to monitor the productivity and survivorship of land birds.

The goals of MAPS include determining the demographic causes of population change and formulating and evaluating landscape-level management strategies to reverse population declines. Likewise, BBS data are widely used by researchers; federal, state, and provincial agencies; nongovernmental organizations; and the general public for various management and research purposes. These data might reveal, for example, whether major population changes of a species in certain areas reflect a continental decline or merely population shifts within its breeding range.

Biologists continually emphasize the critical importance of bird observatories for providing long-term, consistent, standardized research. Allen Fish, director of Golden Gate Raptor Observatory (GGRO), says this is where bird observatories really shine. "My goal is to establish easily described methodologies so that in the year 2100, my great-grandson could come to Hawk Hill and, using our manual, conduct a comparable raptor migration count."

"We have so little consistent data collection that goes back 30 or even 10 years," C. J. Ralph says. "This is why we need bird observatories—just to get to the point where we can draw conclusions."

"Bird observatories fill in a vital gap," agrees Fish. The Golden Gate Raptor Observatory conducts research on the annual bird migrations along the Marin Headlands, just north of San Francisco. Similar migration counts done at Hawk Mountain, Pennsylvania, beginning in 1935, documented the declines of Ospreys, Peregrine Falcons, and Bald Eagles during the DDT era. Perhaps GGRO data will be able to provide similar future warnings of any drastic changes in western raptor numbers.

Matt Leffert, membership and events coordinator at Point Reyes Bird Observatory, agrees that long-term research is the main reason that bird observatories are important. "We've really exploded here during the last six or seven years," he says, "and part of the reason is that the brand of conservation we do is being recognized for its importance." The observatory conducts research projects throughout California and Oregon and has also begun efforts in Latin America. "We see our success as this: we use birds and bird populations and the health of these populations to look at ecosystem health. And we have 30 years of research to look back on. That's when all the information becomes valuable," Leffert adds.

The increase in the number of bird observatories and, subsequently, long-term consistent data raises the issue of how these data are being used and shared. Although both MAPS and the BBS are continentwide programs, many ornithologists point out that they are not targeted specifically to migration monitoring. Migration monitoring in the United States has no central destination for data and no mechanisms for central coordination of data management or analysis. "We've got this wonderful network for effective monitoring," says Ralph, "a system of mist nets and binocular-wielding volunteers operating across the continent, tracking the numbers and movements of migrating birds. And now we could begin to count birds using standardized methods at a series of migrant concentration sites across the continent to develop indices of population numbers." He'd like to see this network linked and the enormous volumes of data shared and processed to paint the big picture about what is going on with bird populations across North America.

We might intuitively expect the Bird Banding Laboratory, jointly administered by the United States Department of the Interior and the Canadian Wildlife Service, to be the central repository for collecting and analyzing the migration data generated by mist-netting stations. But this is not the case. According to John Tautin, chief of the laboratory, "Our mission at the Bird Banding Laboratory is limited to program administration and support. We supply permits and bands and are a central repository and clearinghouse for information about banded birds, but we are not in a position to coordinate migration monitoring."

Fortunately, all we have to do, Ralph says, is turn our attention north to Canada, where a formal network has recently been established: the Canadian Migration Monitoring Network. This network, which has members and affiliates across Canada, is a partnership between Bird Studies Canada, the Canadian Wildlife Service, and the member bird observatories, which are run independently. Ralph is spearheading a drive to encourage bird observatories in the United States to hook up with this system and make the network a continentwide program.

Canadian Migration Monitoring Network stations use a combination of standardized banding and daily counts at a chain of stations all across southern Canada, providing much-needed baseline data on the population trends of breeding birds. Bird Studies Canada (which actually evolved from Ontario's Long Point Bird Observatory) receives copies of the computerized

Formerly a site where shooters slaughtered thousands of migrating raptors, Pennsylvania's Hawk Mountain Sanctuary (left) is now one of the best-known raptor-watching sites in the world. Data collected there, beginning in the 1930s, documented major declines in some raptor species during the DDT era.

TIM GALLAGHER

TOM VEZO

The Golden Gate Raptor Observatory counts migrating hawks at a site on the Marin Headlands, just north of San Francisco (above). Researchers hope that the long-term, year-to-year data collected will provide a warning of any future drops in western raptor numbers.

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data from each station, in a standardized format, and calculates annual indices and trend information to estimate the population status of bird species. The results are posted on the Internet and disseminated through newsletters, reports, and other publications.

"Very few bird observatories have the technical capacity to churn out the kinds of statistical analysis needed to create population indices," says Jon McCracken, program manager at Bird Studies Canada. But this is just the kind of work that needs to be done, he insists. "There is no point in gathering data just for the sake of gathering data. It is only valuable if it is used. Bird observatories should ask themselves, 'Why are we doing this research?' And if they can't answer with some kind of rigor, it should lead them to question what they are doing and why.

Like many other observatories, Black Swamp Bird Observatory in northeastern Ohio uses a combination of volunteers and staff researchers in its bird-banding operation. Above, Kim Fredritz (left) and Gary Newman examine a newly trapped Brown Thrasher. At right, Julie West measures the wing length of an Orchard Oriole.

"With the Canadian Migration Monitoring Network, we have a system that allows bird observatories to use the data in a cost-effective way, by sharing resources," he says. As an added perk, the network shares training and trades personnel. And network meetings allow scientists and volunteers to share papers, ideas, concerns, and challenges.

Because the network is beginning to achieve results, says McCracken, he can cite examples of how various monitoring programs can corroborate each other's work. "Our trend in migration counts of Red-headed Woodpeckers shows significant declines, and the BBS shows the same results in this part of Canada. This kind of corroboration gives us even more faith in our results, showing that the limitations and potential biases of each type of research are not serious problems." The Red-headed Woodpecker is now listed as a species of special concern in Canada and is on the Partners in Flight Watch List.

Although research is central, bird observatories do far more. According to Mark Shieldcastle, research director of Black Swamp Bird Observatory, "No matter how well done or important, research is of little value unless it is used to educate the public."

At a banding station, staff and volunteers expose nonbirders to close-up experiences with Scarlet Tanagers, Yellow Warblers, and other birds and tell each one's story ("The bird in my hand has traveled from Costa Rica to this exact site for 10 years in a row"). The look of profound awakening on a visitor's face gives bird observatory workers tremendous satisfaction. And McCracken probably speaks for all bird observatory staff when he says, "We couldn't do any of this without volunteers."

So, a bird observatory is made up of integral, interrelated components: consistent bird-oriented research, dedicated volunteers, and an enduring commitment to education. ■

Kristi G. Streiffert is a freelance writer and a frequent contributor to this magazine.

TOM STREIFFERT (2)

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FROM SNOWMELT TO DESERT SEA

BY DAVID W. WINKLER

PHOTOGRAPHS BY MARIE READ

Water is the thread that binds the birds of the Mono Lake Basin

All along the eastern border of California lies its backbone, the Sierra Nevada—the "Snowy Mountains" whose summits sleep under snow for more than six months in most years. By the time June brings extreme heat to the lowlands at the foot of the mountains, the meadows and cliffs at the summits are just awakening under the long days of summer. The snow feeds the rivers that descend the mountains, west to the ever-thirstier human hordes of our most populous state and east to the vast Great Basin. At its source, the snow melts gently, each low spot in the alpine meadows filling with crystalline magic, rivulets joining together as they slowly wend their way across the low grade to meadow's edge. Where the streams find a steeper grade they begin to sing the mountain songs of spring as they gurgle and whisper over the rocks. But the streams heading east sooner or later encounter the sharp, precipitous fault scarp that, over the past 10 million years, thrust these mountains as high as any in the Lower 48 states. At this edge, the songs of spring shift instantly to the roar of falling water, cascades of droplets pounding against the canyon walls, their headlong flight abruptly interrupted by rock.

Only later, at the border where *down* grudgingly yields to *across* does the stream find a bed level enough for life to take hold in its frigid waters. Our brief summer birding visit begins here in the Mono Basin, heading east along the waters of Lee Vining Creek, about midway along the mighty Sierran spine. Following gravity and the rush of snowmelt from the summits of the Sierra to their brief resting place in Mono Lake—one of the oldest and most important lakes for wildlife in North America—we

Famous for its otherworldly landscape of tufa towers, Mono Lake is also becoming a popular birding area.

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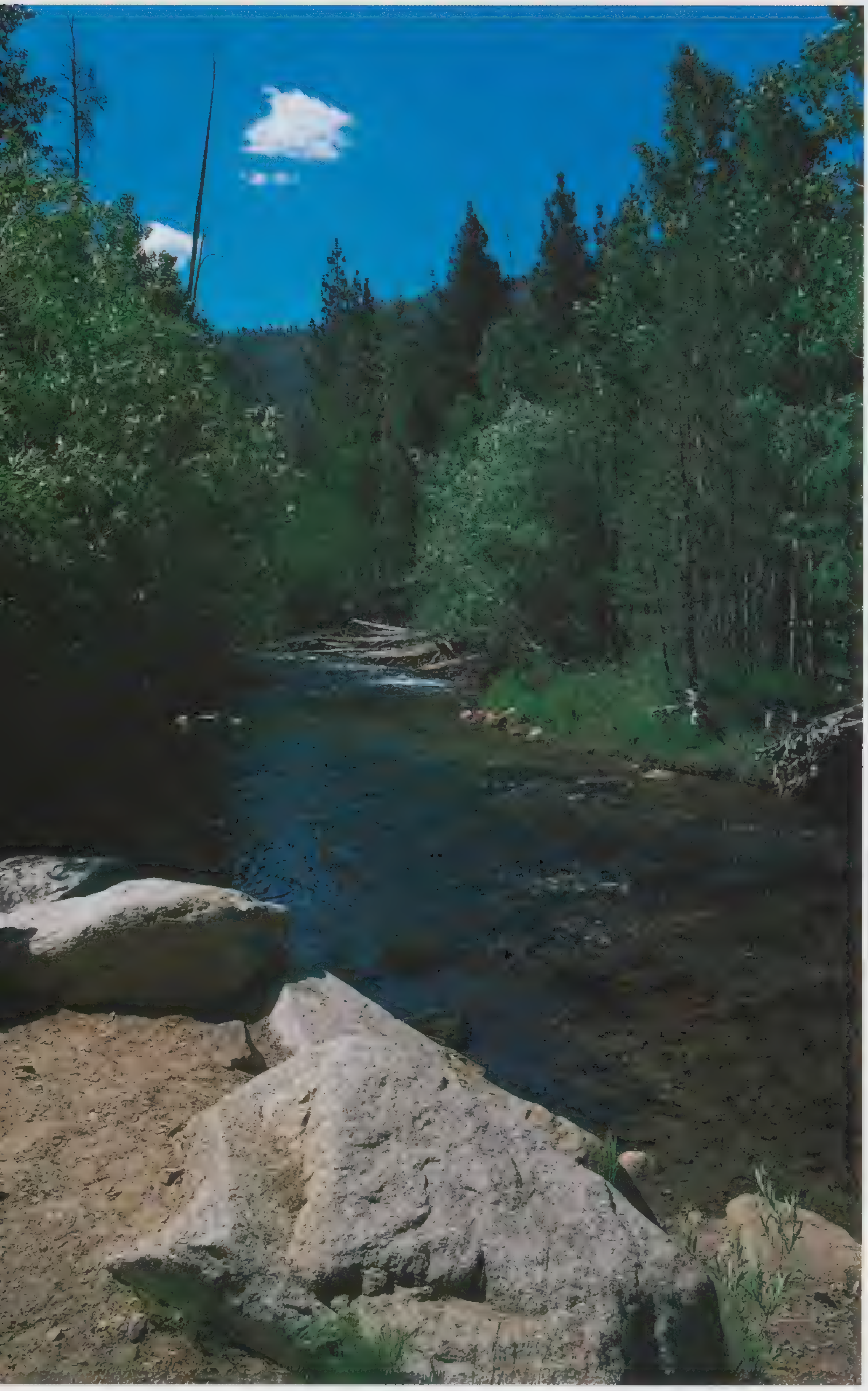


The stream water is among the purest and cleanest in the country, yet in a few miles it mingles with some of the most saline and complex surface water in the world, yielding a dense brew that is home to abundant aquatic animals and the few species of birds that know how to harvest them.

encounter fascinating birds in a striking spectrum of habitats. Although the stream water is among the purest and cleanest in the country, in a few miles it will mingle with some of the most saline and complex surface water in the world, yielding a dense brew that is home to abundant aquatic animals and the few species of birds that know how to harvest them.

John Muir, who tramped these very shores during his exploratory years in the Yosemite Sierra, was an unabashed fan of the Water Ouzel, now known as the American Dipper. When the dipper sings, its wrenlike voice mixes with the complex sounds of rushing water all up and down these mountains. No larger than a thrush but built like an avian linebacker, it makes a living by plucking submerged prey from the streambed rocks. With its strong feet to grasp the slippery rocks and improbably small wings to hold it down against the tearing current, it is as comfortable under water as above, skillfully gathering insect larvae from nooks and crannies before bobbing back to the surface for a breath of air and, if we are lucky, a song. Even with its stubby wings, it can fly strongly, religiously following every bend of the stream as it traverses its long, narrow territory. It is not unusual to see one alight and preen in a patch of shade, taking refuge from the harsh mountain light.

That same intense light helps the trees farther from the stream bank make the most of the warming temperatures and longer days of summer. Quaking aspens, with their distinctive leaves that quiver in the slightest breeze, blanket vast stretches of the mountains' flanks. They spread by root sprouts, forming huge, centuries-old groves composed of genetically identical trees. One common resident of the aspen groves is the Red-breasted Sapsucker. Not only is this bird stunning in its own right, it is the keystone species in a rich web of ecological interactions that makes aspen groves a bird-rich habitat throughout the intermountain West. Using their bills to drill, sapsuckers bring the aspen sap into the open where they and other animals can feast on the sweet juice of the tree. Even more important for the birds of the aspen groves, the sapsuckers create nest holes in the trees' soft heartwood. They tend to grow dissatisfied with a nest cavity after using it just once, and the vacant real estate is avidly colonized by four widespread species: Mountain Chickadees, House Wrens, Tree Swallows, and Mountain Bluebirds. Each of these species has a distinctive and fascinating life history, but the Mountain Bluebird is superlative in its elegance—its color shifting as the angle between the bird, the observer, and the sun varies. The patient observer who follows and views this bird from many angles is rewarded by the indelible vignette of a hovering gem, with colors like a distillation of the sky.

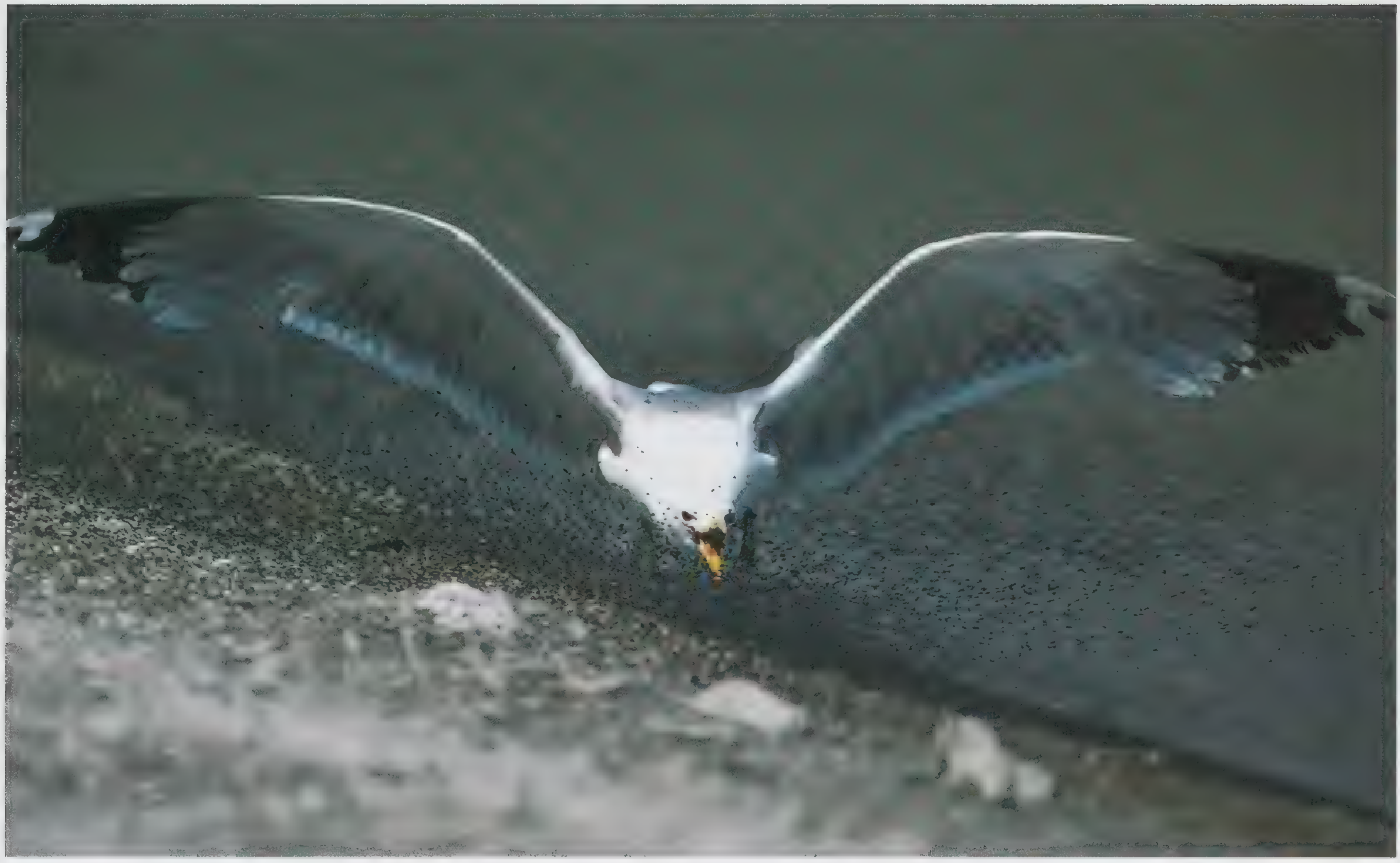
If you can tear away from the delights of aspen birding and wander farther downslope along the creek, the aspen zone gives way to big sagebrush and Jeffrey pine. In the Mono Basin, the compelling vista of Mono Lake will usually overcome the temptation to tarry here among the Gray Flycatchers, Lewis's Woodpeckers, and Pinyon Jays. On all sides, and even within the nearly circular 10-by-13-mile lake, stand the remnants of volcanoes that erupted in the lake during the past 13,000 years—the most recent, Panum Crater, only 700 years ago. Visitors impressed by Mono's contrasts may wonder whether it is a cosmic sign of deeper meaning or a simple coincidence that the lake's two principal islands form a black (Negit Island) and white (Paoha Island) pair.

A lake has occupied the bottom of the Mono Basin for at least the last million years, making it one of the oldest lakes on the continent. Streams only flow into Mono Lake; none since the ice ages has flowed out. Over the long stretch of Mono's history, evaporation of the Sierran snowmelt has left large concentrations of carbonates and chlorides. Volcanoes erupting in the lake have also contributed abundant sulfates, creating a relatively rare "triple water" lake with high concentrations of all three groups of salts common in surface waters. Calcium is one of the only common elements that is rare in Mono Lake water, because it is bound into craggy pillars of calcium carbonate—the lake's distinctive tufa groves. Much like stalagmites in a cave (though formed for different reasons), these towers emerge where calcium in springs enters from the bottom of the lake, combines with the abundant carbonate, and then precipitates out of the water to enlarge the tufa deposits surrounding each of the springs. The towers are probably not very old, because they are fragile. As the lake rises—thanks to the recent reversal of water diversions from Mono Lake—these skeletons of springs past get tattered by waves before finally submerging to begin forming again beneath the rising lake. While they protrude above the waterline, the soft tufa pillars are used as nesting habitat by Violet-green Swallows, ground squirrels, side-blotched lizards, and even Northern Flickers, which all find homes in the formations.

One important species in the aspen groves above Mono Lake is the Red-breasted Sapsucker (at left). These colorful woodpeckers bore holes in the trees, which allow a host of other species to feast on the sweet sap. Perhaps more important, they also create deep cavities in some trees, providing vital nest sites for Mountain Bluebirds (above), Mountain Chickadees, and other birds of the aspen groves.

Mono Lake is about twice as saline and 10 times as alkaline as the ocean, so no fish can survive in its waters. But the lake has abundant nutrients for any living things that can bear its salinity. It supports impressive crops of diatoms and bacteria, which are fed upon by astronomical numbers of alkali flies and endemic brine shrimp (*Artemia monica*). In most lakes, fish would feast on this tremendous productivity, but in Mono Lake these prey are fed on only by birds that can catch them and can tolerate the lake's salt.

One bird that makes a living on Mono Lake's bounty is the California Gull, a "sea" gull that nests throughout the interior West, far from the ocean. The islets to the northeast of the black island support some 50,000 nesting gulls, the largest assemblage of California Gulls in the state and one of the species' largest colonies in the world. Gulls, of course, are good at making a living on a variety of foods. California Gulls are no exception. Though they occasionally indulge in a visit to the tiny Lee Vining garbage



Alkali flies (below) almost blacken the lakeshore at times, providing a bountiful feast for California Gulls, which will often run through a swarm, snapping them up with their bills (above). At right, this tufa tower provided an excellent nest site for a pair of Ospreys.

dump or the lunch of a too-trusting picnicker along a nearby alpine lake, the main courses of the Mono Lake gulls' diet are brine shrimp and alkali flies. The gulls must capture these tiny prey in massive numbers to sustain themselves and their voracious young. They harvest the shrimp by pecking at the lake surface above concentrations of shrimp. Biologists recently manipulated a dead gull's head at one of these concentrations to mimic the pecking and bill closing of a live gull, and they managed to "capture" an average of 18 shrimp per peck. If two inept humans can do this well with a gull's bill, imagine what a real gull can achieve!

The production of alkali flies is so prodigious that much of the lakeshore appears black from the densely packed bodies of millions of tiny flies. This tremendous productivity sometimes leads to another entertaining gull foraging behavior. Rather than trying to ambush their quarry one at a time, the gulls sometimes run full speed through clouds of flies, their wings raised for balance. The birds stretch their necks and heads so low that they seem in perpetual danger of plunging headfirst into the muck. The spectacle of these normally graceful birds tottering pell-mell along the beach, swinging their heads from side to side and snapping their bills loudly and rapidly, is one of the most comical sights in the world of birds. It is not until you look at a high-speed photograph that you realize that this behavior may not be as fruitless as it appears.

The gulls are not the only water birds that breed at Mono Lake. The state's largest population of Snowy Plovers nests on the lake's remote eastern shore, and a good-sized population of American Avocets frequently nests in sheltered salt flats along the northern shore. North America's most elegant shorebirds, avocets often forage in pairs in shallow water along the shore, swinging their long, upcurved bills from side to side in the water. If you approach a nest or recently hatched chick, however, the graceful demeanor of these elegant birds is rudely transformed as they deliver a jarring racket and swooping flights that will make you scurry for cover.

Killdeers and Spotted Sandpipers are also among the commonly encountered shorebirds at Mono Lake, but they are not as aggressive as avocets. The Spotted Sandpiper finds great habitat for nesting along the creeks entering Mono Lake. It is not that picky about where it nests, as long as there is abundant reasonably fresh water with some stony shores. These teetering sandpipers and their young are common along the lake's western shore during much of the summer. Wilson's Phalaropes are

VISITOR INFORMATION

Birding in the Mono Basin is great from May through October. The snow on the Tioga Pass Road from Yosemite is often cleared by Memorial Day, or by July 4 at the latest. The Basin has two excellent visitors' centers. The Mono Lake Committee's Visitors' Center is on Highway 395, in Lee Vining. You can contact the committee at (760) 647-6595 or visit its web site at <www.monolake.org>. The U.S. Forest Service Visitors' Center overlooks the lake on the northeast edge of town. Call the center at (760) 647-3044. Either will provide information on road conditions, lodging, and more, and both have excellent bookstores and wonderful collections of Mono Lake memorabilia. The First Annual Mono Basin Bird Chautauqua—a weekend of learning, birding, and music at Mono Lake—will take place June 21–23, 2002, in Lee Vining. Contact the U.S. Forest Service Visitors' Center (above) for more information.

uncommon breeders in some of the remote grassy marshes in the lake's eastern half, but starting in July more than 100,000 of these amphibious sandpipers arrive at Mono Lake from breeding areas in the intermountain West and the prairies. They crowd parts of the southern shore, pirouetting on the lake surface whenever it is calm, picking up shrimp and flies much like the gulls, but with a capillary strawlike advantage provided by their long slender bills. A few weeks later, large numbers of Red-necked Phalaropes join the Wilson's. By late August, both species are on their way to their South American winter homes—Wilson's in Andean salt pans and red-necks on the open sea.

Just as the numbers of phalaropes are declining, the fall show of Eared Grebes begins, with numbers climbing through August into September. You would be lucky to see any in June, but by October the grebes reach such high densities it looks like you could walk across the lake on their backs. These million or so birds pause here to molt (as do the Wilson's Phalaropes) en route to wintering grounds off the coast of California and Mexico.

Mono Lake so dominates the food supply of aquatic birds in the Mono Basin, it is easy to forget that some birds feed elsewhere and use Mono only as a place to nest, safe from terrestrial predators. An occasional American White Pelican or Caspian Tern pair breeds on the lake's islands, and Great Horned Owls and Ospreys find protected nest sites on the lake's tufa towers. Almost every year a nesting raptor occupies one of the more prominent tufa towers. Because the lake's water is devoid of vertebrate prey, all of these birds find sustenance elsewhere. The owls don't need to go much farther than the gull colony in summer, but the fish-eaters must commute at least 20 miles round-trip for every fish they bring back to their ravenous young.

Mono Lake's enchanting landscape and teeming bird life seem like such an integral part of the Mono Basin that their presence might be taken for granted by first-time visitors unaware of the lake's recent history. The same clear, cold snowmelt that feeds the lake was diverted in 1941 into a 350-mile-long aqueduct that takes it all the way to Los Angeles. By the mid-1970s, the water level of the lake, deprived of more than half of its tributary inflow, had dropped more than 40 feet. The lake's birds were suddenly threatened by the emergence of land, which connected some of their formerly ground-predator-safe nesting areas with the shore and also led to the disappearance of some of their prey. When a few bird watchers formed the Mono Lake Committee in 1978, the odds of preserving the lake's ecological integrity seemed remote. But in 1995, after many years of hard work presenting the lake's case to a variety of judges and government officials, the tributaries of Mono Lake began to flow into the lake once again—albeit at lower than historic rates. The Mono Lake Committee continues to keep watch on the lake as it rises nearer to its natural level and its desiccated tributary streams are restored. Through education and lobbying, its members work tirelessly with government agencies to make sure that every year's Sierra snowmelt is equitably balanced between the people of Los Angeles and the birds and other inhabitants of this remarkable high desert lake. ■

Tufa towers (left) form as calcium emerges from springs on the lake bottom, mixes with carbonate, and then precipitates out of the water, enlarging the tufa deposit around each spring. They are fragile, constantly being worn down or broken by wave action, only to form again beneath the rising lake.

Above, an American Avocet in its stunning breeding plumage forages in the shallows at Mono Lake. Since the 1940s, water flowing to the lake has been diverted to Los Angeles. But thanks to the tireless work of numerous Mono Lake advocates, the lake's share of the water has been increased significantly, and it is rising ever closer to its natural level.

David Winkler is a professor in Cornell University's Department of Ecology and Evolutionary Biology and a member of the Lab of Ornithology's administrative board. He edited An Ecological Study of Mono Lake, California *for the Mono Basin Research Group in 1977 and cofounded the Mono Lake Committee in 1978. Marie Read is a renowned bird photographer based in Freeville, New York.*

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The Tele Vue [85] *took me for one of the best birding rides of my life. Scanning across the lake at 75x, I spotted a whitish speck in the distant heat waves that I thought might be a Loon. Doubling magnification to 150x, I could then clearly make out the face pattern and upturned bill of a Red-Throated Loon. This local rarity was not even visible through my 10x binocular.*

Both of the scopes provide amazingly sharp, bright views of birds at a whopping 150x magnification... As dusk was approaching, the Tele Vue-85 provided a significantly superior image at 75x than either the Swarovski or Leica could muster at 60x. If you want to push the envelope of high magnification birding, I'd definitely check out both the Tele Vue models. — Ken Rosenberg

"The Tele Vue-85 attained an almost unimaginable level of brightness and edge to edge sharpness." — *Living Bird*

From *Birding* magazine December 2001 report:

The 85 goes beyond need to provide the kind of view that leaves birders speechless with delight, that keeps their eye centered over the eyepiece for 5 or 10 minutes at a time. No matter how many times they have looked at the bird in question through other instruments, "I never saw that before..." The view through the Tele Vue-85 is well beyond identification; it is an aesthetic experience that might, for some, be absolutely addictive. — Stephen Ingraham

Spotlight

WHITE BIRDS . . . EXPOSED

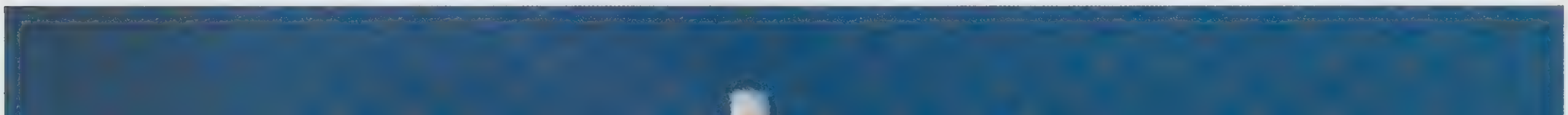
Text and photographs by Bobby Harrison

A simple formula for taking perfectly exposed pictures of the most challenging bird subjects

Photographing white birds is a challenge. Often the bird's image winds up looking either washed out with no detail in the white feathers or drastically under-exposed, making the bird appear gray instead of white. For many photographers, creating true-to-life pictures of white birds seems like a mythical ideal that is seldom achieved. But actually, anyone can consistently take perfectly exposed pictures of white subjects. All it takes is a basic understanding of how to use your camera's built-in spot meter to determine the best exposure for the film you're using.

Modern cameras are the most sophisticated ever made. Some not only measure exposure values in segmented matrixes but also recognize color values. Using these cameras in the automatic exposure mode, you can take accurately exposed pictures 95 percent of the time without touching the shutter-speed or aperture settings. But there's the rub: for the other five percent of your picture taking—which includes white birds and other difficult subjects—a camera's automatic-exposure mode is completely inadequate. When it comes to photographing a white bird, no light meter in existence can determine an accurate exposure—unless the photographer makes some type of exposure compensation.

Because white birds lie outside the range of a light meter's automatic exposure capability, you should set your camera to manual exposure and use a spot-metering system. Many, and perhaps most, single-lens-reflex (SLR) cameras now have three built-in light-meter modes: matrix, center-weighted, and spot. If you set it in the matrix or center-weighted modes, the meter takes readings from different areas of the film plane and averages them together to determine the exposure. But in many cases, an average (midtone) exposure may be the last thing you want. A spot meter solves this problem by taking a reading only in a small area at the center of the frame. And when you use a long telephoto lens—the norm for most bird photography—the spot-meter-sensor area is even more closely defined.



White birds such as the American White Pelicans (above) and the Snowy Egret (facing page) are notoriously difficult to photograph. They often look either washed out or gray in pictures—unless you know this easy formula for success.

Each camera model has its own method of indicating the proper exposure when it's in manual exposure mode. Some use lights in the viewfinder to indicate a proper midtone exposure. Usually a small light along the right- or left-hand side of the viewfinder will turn green when you set the exposure to the correct shutter speed and aperture combination. Red lights above and below the green light indicate by how many f/stops an image is over- or under-exposed. Some have a match-needle system. Others use an analog scale. For demonstration purposes here, I will refer only to an analog scale.

In most modern cameras an analog scale appears at the bottom of the viewfinder when you select manual exposure. It usually consists of a line with a zero point at the center and plus-and-minus, 2-f/stop increment indicators on either side. The plus-and-minus indicators are usually further divided into $^1/_2$- or $^1/_3$-f/stop increments. The zero indicates the correct midtone exposure setting; the plus and minus marks indicate values above and below a midtone.

A spot meter allows you to measure the brightness of the light in various parts of a scene and compare them with each other (and with the midtone exposure) on the analog scale. Areas of the image that you wish to be lighter than a midtone should appear on the plus side of the zero, and areas you wish to be darker than a midtone should appear on the negative side. Using an analog scale allows you to check how many f/stops certain areas in a scene fall above and below the midtone. Where you should set your exposure depends on the latitude of your film.

Slide film is the least forgiving with a latitude of only 3 f/stops—you can successfully take a picture exposed at as much as 1 $^1/_2$ f/stops above or below a midtone. Color print film has a latitude of 5 f/stops, but black-and-white print film has the greatest latitude, providing a full 7-f/stop margin of error. Because most bird photographers use slide film, I will base my example on this.

It is important to understand that a light meter bases all exposures on midtones. A midtone is any value that reflects 18 percent of the light that falls on it. It can be red, blue, green, or any combination of these colors. The only requirement is that it reflects 18 percent of the available light.

Camera light meters are calibrated in such a way that no matter what your photographic subject is, the meter will indicate an aperture and shutter-speed combination that will produce a midtone exposure. This is great if you're actually photographing a midtone subject. But if your subject is lighter or darker than a midtone, you'll get a false reading, and your picture will be either over- or under-exposed. For example, if you take a meter reading of a white subject, your camera will give you an exposure setting that will render white as a midtone—basically a gray. To reproduce a white subject accurately on film, your exposure setting must be adjusted. You have to open up the aperture (or slow down the shutter speed) to allow more light to reach the film. This will move the exposure to a proper, lighter value. How far the metered white value should

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be moved depends on the latitude of your film.

So how does this relate to photographing white birds? White birds are as much as $3\frac{1}{2}$ f/stops lighter than a midtone. Therefore when you photograph white birds with slide film—which has a latitude of 3 f/stops—you must adjust the exposure accordingly. But before adjusting the exposure, you have to determine what a midtone exposure would be for the subject you're photographing. This is where all the mumbo jumbo about latitude and manual-exposure spot metering comes into play.

With your camera in the spot-metering mode, point your lens toward the white bird and place the spot-meter sensor on the lightest portion of the bird where you want to retain feather detail. Take a meter reading and adjust the aperture (or shutter-speed) setting so that the exposure indicator is on the zero mark of the light meter's analog scale. If you took the picture now, using this exposure setting, you would end up with a picture of a gray bird. To get the detail you're after in the white feathers, open up the aperture to allow more light to reach the film. The exposure indicator of the analog scale will move to the plus side as you do this.

Remember that the latitude of slide film is 3 f/stops—$1\frac{1}{2}$ f/stops above and below a midtone. Opening the aperture $1\frac{1}{3}$ f/stops above the midtone or zero point on the analog scale will give you an exposure that will make the bird's feathers white in your picture. But why increase the amount of light by only $1\frac{1}{3}$ f/stops if the latitude of slide film is $1\frac{1}{2}$ f/stops above a midtone? Because this sets the exposure at the threshold of the film's ability to produce a white with detail. The white feathers would be white if you used an exposure setting $1\frac{1}{2}$ f/stops above a midtone, but the feather detail would be lost.

It's really simple: spot meter the lightest feather of the white bird, and then set the exposure to $1\frac{1}{3}$ f/stops above the midtone mark on the analog scale. You now have the perfect exposure for a white bird, capturing complete detail in its feathers. It works on sunny days, cloudy days, and rainy days—every time. If you've made the move from film to a digital camera, no sweat—exposing a digital flash card is just like shooting slide film. This method will render a perfect exposure in a digital format.

What if your camera doesn't have a spot meter? Just choose any midtone value in the same light as the white bird you want to photograph. Set the shutter-speed and aperture combination that will give you the best exposure for that midtone, then *close* the aperture by $1\frac{1}{3}$ f/stops. This moves the midtone to a darker value, but it also brings the white feathers of the bird into the latitude range of your film, giving you a perfect exposure.

That's it, pure and simple: the myth is debunked, the truth about photographing white birds is exposed. It's time to get out and start taking great images of white birds, confident that every exposure will be perfect. ■

Bobby Harrison is an associate professor of art and photography at Oakwood College in Huntsville, Alabama, and a well-known bird photographer. Visit his web site <www.bobbyharrison.com>.

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TO BE A PURPLE MARTIN LANDLORD

by Pete Dunne

I walked up to the counter and smiled. The shopkeeper returned the smile. "I'm thinking about putting up a birdhouse," I said. When he asked if I had a species in mind, I replied, "How about Purple Martins?"

"Okay," he said. "I need to see two forms of ID, one with a recent photo."

"I plan to use cash," I told him.

"It isn't a matter of credit, it's a matter of responsibility. I need ID to do a background check."

"To do what?"

"To do a background check. This is a serious matter. Many people are just not equipped emotionally to be a Purple Martin landlord."

"Isn't this sort of extreme?" I said.

"Sir," he said, "Anything you say in my presence may affect your eligibility to purchase a Purple Martin apartment. Across most of North America, Purple Martins depend entirely on humans to provide suitable housing."

"Wouldn't an alliance with woodpeckers serve them better?" I suggested.

He didn't smile. He just handed me a questionnaire and a document entitled, "Covenant to Assume All Obligations, Duties, and Responsibilities Concomitant with Purple Martin Landlordship," then he left to run the background check.

The questionnaire asked: "Are you now or have you ever been censured for negligence relating to the maintenance of Purple Martin colonies? Have you ever been a member of the House Sparrow Alliance, Starlings First, or any other organization whose objectives might undermine the martin social structure? Are you phobic about feathers, bird droppings, or feather lice? Do you have any physical limitations that might impair your abilities as a Purple Martin landlord?"

I had to promise to erect the box in accordance with mandated guidelines, to check the box weekly for pests, to replace nesting materials halfway through the breeding cycle, and to measure the nestlings and plot their development.

"It must be signed in purple ink in the presence of a witness," the returning clerk advised. "Your background check came up negative."

He then removed some cards from a drawer and held one up. "Look at the ink blot and tell me what you see," he said.

"Mother Teresa feeding mealworms to young martins?"

"Good. How about this one?"

"Lenin removing the capitalist yoke from the necks of the downtrodden Purple Martin masses?"

"Excellent!"

After passing this and a stress test, then field stripping and reassembling a Purple Martin apartment while blindfolded, he let me take the pledge of Purple Martin management.

He then showed me a basic, five-star-rated Purple Martin apartment complex.

"How much?" I asked.

"Four hundred dollars."

"Four hundred dollars?

"That includes the pole, pulley, and predator guard. Installation is extra."

"Isn't there an easier and less expensive way to attract birds to my yard?"

"Sure," he said as he held up a basic-looking bird box.

"What's this?" I asked.

"A wren box."

"Do I need to take a course in environmental ethics or submit to weekly inspections by the Wren Police?"

"Nope," he said. "Just hang it up, and the wrens will do the rest."

"Sounds like Purple Martins could learn a thing or two from wrens," I joked. The clerk didn't smile.

"Sir, let me remind you that anything you say in my presence . . ."

I bought the wren box. ■

Note to aspiring Purple Martin landlords: Successfully attracting and maintaining Purple Martins does require a high level of commitment but not, as yet, a background check. But contacting the Purple Martin Conservation Association at (814) 734-4420 <www.purplemartin.org> would serve you—and Purple Martins—well.

ILLUSTRATION BY JEFF SIPPLE

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LIVING BIRD

Cornell Laboratory of Ornithology

SUMMER 2002

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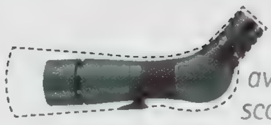
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Cornell Laboratory of Ornithology

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To interpret and conserve the earth's
biological diversity through research, education,
and citizen science focused on birds.

LIVING BIRD

SUMMER 2002 VOLUME 21 NUMBER 3

GREETINGS FROM SAPSUCKER WOODS

On May 11, 2002, the Lab of Ornithology's hard-driving big-day team finally won top honors in New Jersey's famed World Series of Birding. Although the team had tied for first place last year, this was the Sapsuckers' first complete victory.

This was no mean feat. For 19 years now, world-class birders from across the continent and even overseas have vied in this event, scouring the Garden State from top to bottom to find the most birds in 24 hours.

The last time I took part was 10 years ago, when I was captain of the Sapsuckers. I'll never forget the excitement or the incredible fatigue as the day wore on, and the bouts of despair as we doggedly tried to keep going, finally running on pure willpower.

It's amazing how much the event has changed since then and how much the bar has been raised. In 1992, we found 184 species (11 more than the Sapsuckers had ever before tallied in a big day) and garnered more than $50,000 in pledges. At that time, if a team broke 200, it usually snagged first or second place. This year, the number two finishers logged a whopping 222 species, just two species short of the Sapsuckers' winning score of 224. And thanks to all of the team's friends and supporters (and team sponsor Swarovski Optik), the Sapsuckers earned $160,000 in pledges, which will be used to support bird conservation programs.

So hats off to the mighty Sapsuckers, the newly crowned world champions of birding. To honor their winning effort, we're presenting a photoessay in BirdNews on page 5.

Tim Gallagher
Editor-in-Chief

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Watching birds and dodging tumbleweeds in Arizona's Sulphur Springs Valley.

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When hunting and nonhunting conservation groups come together to save the same habitat, everyone benefits—especially the birds.

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Front cover: The stunning Vermilion Flycatcher is a specialty of the Southwest and Mexico, where it can be found perched on streamside shrubs, in bottomlands, and near small woodland ponds. Photograph by Gary Kramer.

Right: Sandhill Cranes are a big draw for birders who visit Sulphur Springs Valley, Arizona, where more than 12,000 of these stately birds winter. See article on page 22. Photograph by Bobby Harrison.

Back cover: Perfectly reflected in a still pool at sunset stands an adult American Avocet. Gary Kramer took this evocative portrait, as well as the flycatcher picture on the cover, during the Valley Land Fund Wildlife Photography Contest in Texas.

LIVING BIRD
SUMMER 2002 VOLUME 21 NUMBER 3

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Letters

BIG BIRDS

May I compliment you on the superb article by Tui De Roy ("Soaring Spirit of the Andes") in the Spring 2002 issue of *Living Bird.* Having just completed seven years of research for the recently published *Field Guide to the Birds of Peru,* I was most impressed with the thoroughness of the article. However, may I suggest that the Andean Condor is not the "largest flying bird" in the world. This distinction belongs to the Wandering Albatross, adults of which have wingspans that measure 351 centimeters as opposed to the Andean Condor's wingspan of 320 centimeters. In Tui's defense, however, the Andean Condor is the heaviest flying bird in the world, weighing in at 15,000 grams, followed closely by the Whooper Swan at 12,700 grams. The Wandering Albatross, with its superbly constructed light skeleton, designed for effortless ocean flying, weighs in at 11,300 grams.

James F. Clements, Ph.D.
Ibis Publishing Company
Temecula, California

ASTRONOMICAL OMISSIONS

I read "Scoping for Optics" by Kenneth V. Rosenberg in the Winter 2002 issue of *Living Bird,* and I noted some significant omissions—particularly in the coverage of the Questar telescope. I own two Questars and have more than 30 years of experience with this, the world's finest personal telescope. The author gives high marks to the Tele Vue 85 at 75x when it is compared directly with the Leica APO and the Swarovski ST80 HD at 60x and with the Questar at 40/60x. He speaks about inserting a 2x Barlow lens between the eyepiece and the Tele Vue scope to obtain "an incredible 150x." In these comparisons, Rosenberg makes observations based upon dissimilar criteria and omits useful information that a prospective scope owner might find very useful.

In his discussion of scopes designed primarily for astronomy, Rosenberg states that all of these scopes have drawbacks that might limit their popularity with birders. "The 90-degree-angle on most of these scopes requires you to look straight down, which makes it hard to spot birds quickly and can literally give you a pain in the neck," he says. "Furthermore, these scopes usually reverse the image in the eyepiece . . . this makes it more difficult to follow a bird." However, the Questar has simple accessories that make it possible to mount an eyepiece for straight-through viewing, eliminating the necessity to look down, and it is also easily equipped with an image erector that simply threads into the control box to correct the image reversal in astronomical telescopes. In its dual mode, the Questar can accommodate two separate eyepieces of differing power, giving the viewer instantaneous choices of three different powers when the built-in Barlow lens is used.

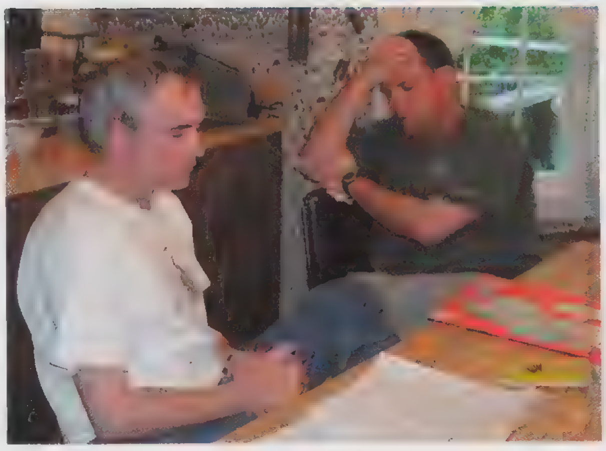
These points and several others were not mentioned in the article. They should have been, along with similar pertinent information applicable to any of the other instruments under review. Your readers would like to know.

R. Neal Moore
Buxton, North Carolina

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send e-mail to <livingbird@cornell.edu>.

The Road to Victory

Now the asterisk is forever erased from the Sapsuckers' big day record. In the final minutes of May 11, 2002, as the fantastic five staggered into the World Series of Birding headquarters at Cape May Lighthouse, they discovered that they'd won it all. No tie. No near miss. Their 224-species total was the top score. Here's a selection of snapshots to give you an inside peek at the anatomy of a big-day victory.


JAY McGOWAN

"Where's the coffee?" Already exhausted from a week of scouting, Jeff Wells (left) and Steve Kelling work on their final big-day strategy at Randy and JoAnn Little's home.

KEVIN McGOWAN

"Breakfast of Champions." Steve and Ken hold up two New Jersey hoagies—a food that has sustained 19 years of Sapsuckers. Obviously Ken has the bigger appetite.

JAY McGOWAN

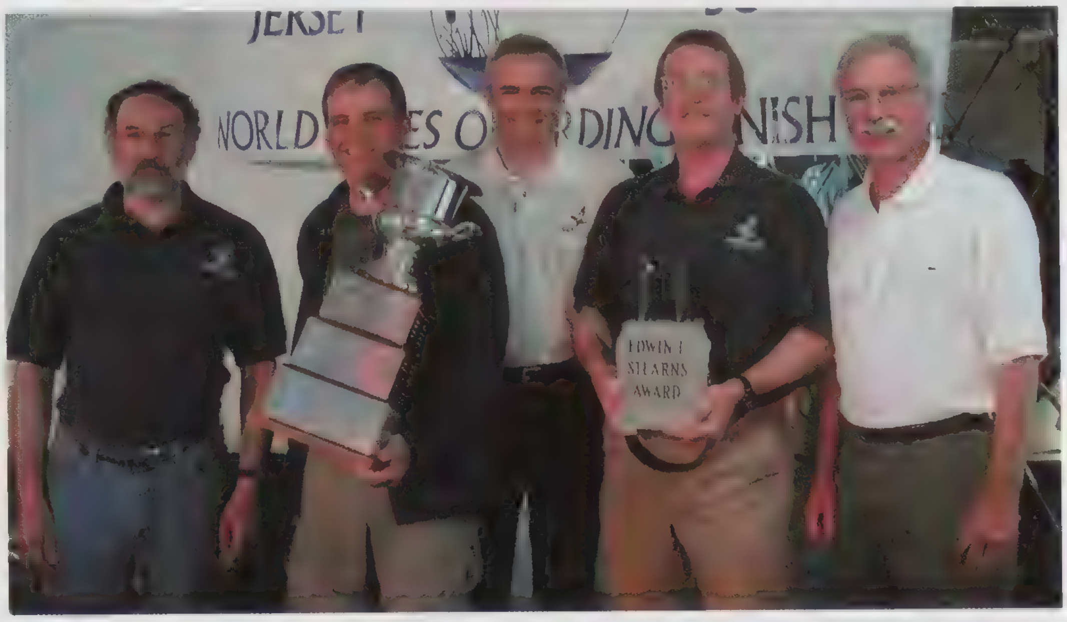
"Mute Swan! Got it!" Not all bird sightings are equally difficult. Kevin McGowan strolls past a pair of Mute Swans at Cape May Meadows.

MIKE POWERS

"Double vision." Jeff Wells and Ken Rosenberg (right) scan for waterfowl on the Delaware River while simultaneously listening for singing warblers and other songbirds.

KEVIN McGOWAN

"Just one more bird . . . please!" Standing patiently in the dark, with 223 species already under their belts, the Sapsuckers wait . . . and wait . . . and wait. Finally, the nasal kik-i-do *of a Black Rail comes blasting from the marsh. "Got it! 224."*


JERSEY
WORLD SERIES OF BIRDING FINISH
EDWIN I. STEARNS AWARD
ANN REDELFS

"Victory!" The Sapsuckers—(left to right) Ken Rosenberg, Steve Kelling, Jeff Wells, Kevin McGowan, and John Fitzpatrick—proudly display the Urner Stone Cup for overall winner and the Edwin I. Stearns Award for highest total by an out-of-state team. Long may their glory live, the mighty Sapsuckers.

IN A DEVASTATED LAND

by Mel White

Exploring the paradoxes and dilemmas of Madagascar

Like a pointillist painting, Madagascar is better observed from a distance. From three miles high, it's a place of pleasing earth tones, a cool designer's palette of ocher, umber, and tan. As my Air Madagascar flight descends, the landscape comes into clearer focus—and it's a shocking vision, even though I've spent weeks reading environmental horror stories about this island nation in the Indian Ocean.

The warm reddish tones that seemed so soothing from cloud level are the earth's raw skin, dissected by mud-blood rivers, under hillsides slumped into minicanyons by erosion. The haze that gives the scene an impressionistic softness rises from fires scattered to the horizon.

Along the highway running south from the congested capital city of Antananarivo, the bright green rice fields emphasize even more the barren surrounding ground. The only trees are alien eucalyptus, guava, and casuarina. The ruined terrain goes on for mile after mile, hour after hour. It's not second growth, not cropland, not pasture—it's almost not anything at all.

Much of the country's notorious devastation derives from Malagasy veneration of the zebu, a cattle breed valued more for the social status it provides than for its meat or milk. Grassland naturally covered much of Madagascar's central plateau, but elsewhere the native vegetation has been intensively cleared for pasture, and all of it is burned regularly to produce

MEL WHITE

"The ruined terrain goes on for mile after mile, hour after hour. It's not second growth, not cropland, not pasture—it's almost not anything at all."

the new green growth that follows spring rains. The clay-rich soil is completely unsuitable for this regime and yields less and less graze. And yet it is burned and burned again, year after year, until it's baked, in the words of one scientist, to "the color and fertility of a brick." With so much land made unproductive, the Malagasy—one of the world's poorest peoples, with one of its highest birth rates—must slash and burn even more just to survive, pushing farther and farther into what remains of Madagascar's native vegetation.

FRANS LANTING/MINDEN PICTURES

Malagasies plant maize by hand on a burned and deforested hillside, above. The clay-rich soil is completely unsuitable for this kind of agricultural method, which leaves ever-larger areas unproductive for anything.

So why am I here, rattling along a potholed highway in a sport utility vehicle on a hot October morning? Better, really, to ask why the World Wildlife Fund, Peregrine Fund, Wildlife Conservation Society, Missouri Botanical Garden, Duke University Primate Center, and many other environmental groups are so prominently at work here. An argument could be made that, considering the number of rare and endemic species on the island and the degree of threats they face, saving the 15 percent of natural Madagascar that remains intact is the number-one conservation priority on the planet.

Four-fifths the size of Texas, Madagascar is home to more orchid species (perhaps 1,500) than the entire African continent and three times more palms, along with half of the world's chameleon species. The island has more than 200 species of frogs, of which all but two are endemic. And of course there are the lemurs, those big-eyed primates that have radiated into an array of more than 30 species filling all sorts of ecological niches, and that all have in common an almost preposterous cuteness.

For its size and partly tropical location, the world's fourth-largest island doesn't possess a rich avifauna. Of its slightly more than 200 breeding species, though, around 60 percent are endemic, with several endemic families. Traveling around Madagascar, visiting parks and reserves and learning about environmental issues, I'm hoping to see a fair sampling of its special birds.

As I head south in the company of a Malagasy driver and an extremely bright and competent guide named Holy Ramasomanana, the birds I find first are a mix of species, some native but widespread, some alien, and some endemic. Rock Dove, Pied Crow, Great and Cattle egrets, Common Mynah, and Black (Yellow-billed) Kite are in their usual spots, but soon I've also seen Madagascar Buzzard, Madagascar Kestrel, Madagascar Sunbird, Madagascar Wagtail, Madagascar White-Eye, Madgascar Swift, Madagascar Magpie-Robin, Madagascar Bulbul, and Malagasy Kingfisher. Do you note a pattern here? From grebe to hoopoe to munia, the list of species exclusive to this island is long and diverse.

The sight of gorgeous birds such as the kingfisher or Souimanga Sunbird is cheering, but even better are the native plants that appear as we turn east off the main highway and approach our first destination. Tapia trees, palms, and tree ferns slowly take over from the ubiquitous eucalyptus along the twisting road. We round a bend to see the Namorona River thundering over a waterfall in a deep gorge below. Across the mist-filled valley rises a hillside covered in lush native rainforest, and it's as if we had crossed the border into another country.

This is Ranomafana National Park, set on the eastern escarpment where the central plateau drops down to the lowlands bordering the Indian Ocean. Like many such vestiges of native habitat, it exists mostly because the steep terrain has discouraged *tavy*, or slash-and-burn subsistence agriculture. With a dozen lemur species, 90 reptiles, 300 orchids, and more than 120 birds, Ranomafana is one of the reasons the world's environmental groups have such a significant presence in Madagascar.

The potential for ecotourism is one of the few bright spots in Madagascar's future. Obstacles are significant, including governmental corruption and the lack of infrastructure, but throughout the country conservationists are working to convince local people that native forest is more valuable than firewood, that the interest of *vazaha* (white foreigners) makes lemurs worth more alive than in cookpots. At Ranomafana, as at most parks, visitors are required to hire a guide to walk the trails. In theory, this policy puts money into the communities and creates a corps of people with a financial interest

MEL WHITE

A red-fronted brown lemur sits on a branch at Ranomafana National Park. Madagascar is famous for its lemurs—small primates found nowhere else on earth but there and the adjacent Comoros Islands. Due to habitat destruction, 17 species are endangered.

in protecting the parks and their resources.

My guide at Ranomafana is one of the most famous in the country, a wiry fellow named Jean Emilien Rafidison, called by everyone Fidi. "Tour groups fight for him," Holy tells me, and after I've been with him awhile I can see why. Rainforest birding here is no easier than it is in the Amazon, with many birds skulking in the darkness under the dense canopy and others staying high in trees. Fidi seems to hear every one; with the slightest twitter or buzz he's off, leading me up and down hillsides in pursuit of little plain jobs like the Wedge-tailed Jery (a babbler) and big beautiful things like the Blue Coua (a cuckoo).

I begin here to get acquainted with some of the families endemic to Madagascar and nearby smaller islands. High over the Namorona River soars a Cuckoo-Roller (sole member of a monospecific family) in its odd, floppy-winged song flight, whistling loudly. Among the many striking birds Fidi finds in the darkest part of the forest undergrowth is the lovely Pitta-like Ground-Roller, in glittering shades of blue, green, and bronze—one of five species in a family found only on this island. The 15 vangas, all endemic to Madagascar, have evolved to fill ecological roles taken elsewhere by shrikes, nuthatches, scimitar-bills, and flycatchers. At Ranomafana I check off Chaberts, Pollen's, Red-tailed, and Tylas vangas, all prettily marked and all more-or-less typical insect-eating passerines.

I see more than birds at Ranomafana, of course. We find a gorgeous ring-tailed mongoose near a scientist's cabin, attracted by the smell of chicken cooking. Among the five species of lemurs I see is the fabulous Milne-Edwards's sifaka, with chocolate-and-cream fur and hauntingly glowing orange eyes. But, just as I'm partial to pretty little birds like warblers and manikins, it's a midget that steals my heart at Ranomafana: the brown mouse lemur, a creature with tree-frog toes, huge eyes that give it a perpetual look of shocked surprise, and a tiny body the size of . . . well, a mouse. Like other lemurs, this species also makes amazing leaps from tree branch to branch, although in its case the jumps are on the order of a foot.

Next there's a long, hot drive across southern Madagascar, through a burned red land of unbelieveable sterility. An occasional Madagascar Lark flies up from the roadside, but I see no other birds at all. The main signs of life are conical termite mounds dotting the terrain, each with its top knocked off by someone searching for the larvae inside to eat. I visit more parks, some of which have environments that are more interesting than the birds. Isalo National Park has fantastic striated sandstone cliffs eroded into jagged ridges, knife-edge points, and hoodoos; Andohahela National Park is noted for its endemic spiny forest, where plants in the euphorbia and didierea groups have evolved convergently to resemble the cacti-dominated scrub of the Sonoran Desert—an illusion quickly dissipated by the outlandish form of a baobab tree, with its massive trunk and gnarled branches.

At the private Berenty reserve in the southeast, the main attraction is the population of Verreaux's sifakas, large white-furred lemurs that travel across the ground with a wonderfully weird "dancing" or "pogo-sticking" motion—positive proof that the evolutionary process incorporates a sense of humor. Here I see three vangas in quick succession one morning: Hook-billed, White-headed, and Sickle-billed. The last, with a long decurved bill it uses to probe for insects, is one of the birds I'd lusted after as I studied the field guides before my trip. I also come across two couas, Running and Giant, both appropriately named (the latter is almost two and a half feet long). Here in this desert habitat, these largely terrestrial cuckoo relatives have evolved behavior very much like that of our Greater Roadrunner, trotting along the ground in pursuit of insects and other prey.

My trip ends back in the rainforest of east-central Madagascar at the adjacent Analamazaotra Special Reserve and Mantadia National Park. Thanks to another seemingly supernaturally gifted guide, who has simplified his Malagasy name to "Jack" for the *vazaha,* I add some special birds to my list here, including Madagascar Ibis (a shy forest bird with a funny shaggy crest), Scaly Ground-Roller (even Jack gets excited), Gray-crowned Greenbul, Madagascar Grebe, Madagascar Blue-Pigeon, the gorgeous Blue Vanga, and the ditto Velvet Asity. Jack and I sit quietly for more than an hour before catching a quick glimpse of a Madagascar Flufftail, a secretive rail that calls constantly but seldom shows itself.

At dawn I hear the thrillingly evocative wail of the indri, the largest of all lemurs, and on a night walk Jack finds a Malagasy Scops-Owl and, serendipitously and incredibly, we happen on a sleeping Madagascar Pygmy-Kingfisher on a branch over the trail. Then, after I spot two Coral-billed Nuthatch-Vangas creeping along a tree trunk, after two Madagascar Partridges run across the road in front of our vehicle, it's time to go home.

After almost three weeks of visiting natural areas and talking to park officials, conservationists, scientists, and guides, I'm better educated on the paradoxes and dilemmas of Madgascar. The poverty, beyond anything I've experienced, and the environmental degradation are depressing; the pockets of nature I've seen are exhilarating. The lemurs and chameleons, birds and frogs, butterflies and moths justify the most extreme protective measures that international organizations can bring to bear; yet every conservationist I met in the country emphasized that their work can't succeed unless it involves and improves the lives of the Malagasy. Villagers who have multiple children and then keep them out of school to provide more workers are short-sighted, yet they can hardly be blamed for doing whatever it takes to feed those children once they're born.

When I asked people working in Madgascar about their hopes for the country's future, not one of them was cheerfully optimistic, yet all were absolutely certain that their work was not only worthwhile but imperative.

"On your trip to Madagascar you arrive with ten questions and you leave with a hundred," a conservationist told me. "And then you plan your next trip."

The biggest question of all is: On the next trip, will the flora and fauna of Madagascar, this unique and much-abused island world, endure in the same extraordinary diversity? Or will the hoot of the Scaly Ground-Roller and the cry of the indri be only memories? ■

MEL WHITE

The pristine savannah habitat alongside Andringitra National Park highlights the beauty of the natural habitats remaining in Madagascar. But how long will it stay that way?

AFGHANISTAN JOURNAL

BY THEODORE L. ELIOT, JR.

Long before the Soviet invasion or the tyranny of the Taliban regime, this American diplomat traveled the length and breadth of this troubled nation to sample its spectacular birdlife

I'll never forget the letter I received one February morning in 1977 at my office in the American Embassy in Kabul, Afghanistan. The writer introduced himself as Ron Sauey, a researcher monitoring a flock of Siberian Cranes at the Ghana Bird Sanctuary in India. He was trying to figure out where the cranes stopped en route to their breeding grounds in northern Siberia, and he speculated that the Ab-e-Estada ("standing water")—a large, shallow lake in southern Afghanistan—might be the place. He asked if I knew anyone who could provide information about

DORANNE JACOBSON

A young Afghan stands in front of an ancient hilltop fort (left). The author (at right, above) and two friends go wading in the Dasht-e-Nawar, in search of Greater Flamingos. This wetlands holds the highest-altitude breeding ground of the species in the world.

BHL

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STEVEN HOLT

Ron Sauey had been monitoring 57 rare Siberian Cranes in India in the 1970s. Curious where they stopped en route to their breeding grounds in northern Siberia, he traveled to Afghanistan and saw them land at the Ab-e-Estada (far right, below).

the place and how to get there, because he wanted to visit it in early March.

I told Sauey he had hit the jackpot. I was a fervent birder and would take him there myself. But I cautioned him that there was no road for the last 20 or so miles off the paved highway from Kabul to Kandahar and that the going might be impossible at that time, when the ground would be muddy from melting snow. Undeterred by my warning, Sauey came the following month. The two of us and several other eager birders piled into four-wheel-drive vehicles and set off for the Ab-e-Estada. Luckily, we made it to the northern lakeshore with little difficulty and then drove east to get a closer look at some large white birds we spotted with our scopes. Sauey's hunch was right on target. Several cranes stood feeding along the shore. And then we watched an unforgettable sight as a flock of these majestic white birds came wheeling across the azure sky, with landing gears down. In due course, 56 of the 57 cranes Sauey had been watching in India showed up at this vast lake.

This was the absolute birding highlight of my entire four-and-a-half-year stay in Afghanistan, from 1973 to 1978. But I had many more remarkable experiences. I was extraordinarily lucky, because my duties as American Ambassador required me to travel around Afghanistan to learn more about the country and meet with local officials, American aid workers, and Peace Corps volunteers. I could combine these trips with my lifelong hobby. I was also fortunate to find several other people who shared my passion for birds—most notably Ron Petocz of the United Nations, who was advising the Afghan government on conservation policies; Bill Foster, a Fulbright program grantee from the law faculty of the University of Wisconsin, who served as an advisor to the Ministry of Justice; and Joe Young from the University of Nebraska, who advised the Afghans on agricultural policy. Our biggest handicap, other than the difficult terrain we had to cover, was the lack of field guides or other written material on the birds of Afghanistan. For the most part we used *Les Oiseaux du Proche et du Moyen Orient,* by Hue and Etchecopar, and *The Birds of Britain and Europe* by Heinzel, Fitter, and Parslow. But these texts were deficient in many respects, especially in describing the distribution of species.

I was also lucky to live in Afghanistan at a time when the country was mostly stable and peaceful. Although the Afghan government worried about my security and often sent a jeepload of bodyguards along to protect me, I never encountered any security problems. In fact, I always asked the Afghan guards to drive behind instead of in front of me so they wouldn't scare away the birds. My companions—usually including my wife—and I always brought along camping gear and food, because we often camped out in the countryside.

We crisscrossed the entire country—an area roughly the size of Texas—usually driving four-wheel-drive vehicles from which we could stay in radio contact with the American Embassy in Kabul, but we also occasionally traveled on foot or on horseback. We explored this varied and starkly beautiful country from the far north-

PAT ELIOT

The author and his group set up camp above the Dasht-e-Nawar, an important wetlands about 9,000 feet high in the central Hindu Kush.

east—along what was then Afghanistan's rigorously guarded border with the Soviet Union—to the plains of the north, which were marvelously green in the spring. We traveled through the high Hindu Kush mountains, which run from east to west in the center of the country and reach altitudes of more than 20,000 feet above sea level, to the grim deserts of the southwest and the mountainous eastern tribal areas.

Of special interest to birders are the few wetlands in this arid country, where precipitation averages 10 inches a year, mostly in the form of snow on the Hindu Kush mountains. In addition to the Ab-e-Estada, a somewhat saline body of water at about 6,000 feet above sea level, the two most important wetlands for birds are the Dasht-e-Nawar, at about 9,000 feet in the central Hindu Kush, and the Haman-e-Puzak and Haman-e-Saberi on the Iranian border in the far southwest of the country—the desert termini of Afghanistan's longest river, the Helmand, and two other major streams.

These wetlands attract tens of thousands of water, shore, and wading birds during migration. The Ab-e-Estada and the Dasht-e-Nawar between them host about 130 species of birds annually. The Greater Flamingo is the signature bird of the Dasht-e-Nawar, which is the highest altitude breeding ground of this species in the world. The two Hamans host two pelican species, the Great White and the Dalmatian. The water levels of these wetlands vary greatly each year, depending on the amount of snowmelt in the Hindu Kush. They are all shallow, and the Haman-e-Puzak is choked with reeds. The birds are constantly hunted in all of these areas.

The Dasht-e-Nawar lies on an east-west plain with snowcapped mountains towering on each side. We camped on the slopes of the southern mountain, looking down on the plain, which in spring and early summer is greening and extremely wet. On spring mornings we awoke to the sounds of passing nomad caravans, en route from winter encampments in the southern lowlands to their summer grazing areas. The sounds of tinkling camel and horse bells

RON SAUEY/INTERNATIONAL CRANE FOUNDATION

and the bleating of sheep and goats filled the air. Women and children strode past, clad in colorful attire, while various pack animals, piled high with goods or luggage, trudged ever forward. Massive sheepdogs kept all the livestock moving, barking and nipping at the heels of sheep and goats.

Sometimes the nomads set up their black goat-hair tents on the slopes below us and rested for a day before heading further upcountry. We would exchange visits at these times and share some of our provisions. They observed us with the same curiosity that we observed them and were puzzled by our interest in watching instead of shooting birds. The birding itself required some perilous driving on muddy terrain and walking long distances in shallow water to be able to see the flamingos and the myriad waterfowl on the north side of the plain.

Approaching the two Hamans meant following some indistinct tracks across a flat, dry, rocky expanse, aptly named the "desert of death." It takes two days to drive the 100 miles from the closest major towns, Kandahar and Farah.

The rugged back-country of Afghanistan is dotted with the ruins of ancient fortressed towns, like these at left in the "desert of death." The civilization that once flourished there was destroyed by central Asian invaders in the 14th century.

In his travels through Afghanistan, author Ted Eliot often encountered caravans of nomads, trudging across rugged deserts and through mountain passes, as their ancestors have done for centuries.

Wildlife is scarce there, except for occasional raptors, and I failed to find any bustards all three times I made the trip. This desert is dotted with the ruins of ancient fortressed towns. As we looked out from their ramparts, the surrounding desert often appeared reddish. But when we looked closer, we found that the area was strewn with red clay pottery shards—traces of a civilization that flourished here centuries earlier, before it was largely destroyed by Tamerlane, the 14th-century central Asian conqueror.

In some areas, massive sand dunes tower over the desert floor. The winter winds shift the dunes, making it difficult for archaeologists, who sometimes return in spring and find their previous summer's dig covered with 100 feet of sand.

The first time I went to the Hamans, my companions and I arrived in the dark. We pitched our tents with the flaps facing in the direction where we thought we could see water and hear the nighttime calls of waterfowl. As dawn broke the next morning, we opened the flaps, set up our scopes, and beheld an astounding multitude of birds. The Hamans occupy an area of about 35,000 hectares on both sides of the Afghan-Iranian border and are clearly one of the most important stopovers for migrating birds in the region.

Altogether, more than 350 species of birds have been recorded in Afghanistan. Wherever there is water, crops grow and birds congregate. The country also has some minor wetlands and a few artificial lakes, as well as a number of areas with superb riparian habitat.

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JOE McDONALD

Eliot had to work hard to find 100 birds in four days in Afghanistan. A Tawny Eagle, above, was their final sighting. The U.S. Ambassador to Afghanistan for five years in the 1970s, Eliot lived and worked in Kabul (below).

In a small lake above the Salang Pass, 13,000 feet high in the central Hindu Kush, I once saw a Red-necked Phalarope, a species I've seen before in coastal and offshore California. The most reliable checklist shows 30 species of raptors: 10 eagles, 5 vultures (including the celebrated Lammergeier), 4 harriers, and 11 falcons. Larks, pipits, wheatears, and wagtails are common. In spring, large flocks of raptors and passerines migrate north through the Salang Pass, the major link between northern and southern Afghanistan. Many of the passerines are caught with nets and eaten by the people living in the lower reaches of the pass. The Afghan Snowfinch, the country's only purported endemic species, also lives in these mountains.

Most of Afghanistan's birds are found in other parts of central and western Asia, but in the eastern part of the country, where the mountains gradually descend toward the plains of the Indian subcontinent, the birdlife is similar to that of Pakistan and southern Asia. In the Jalalabad area, for example, you can see such species as the Small Pratincole, Indian Roller, and Long-tailed Minivet.

Three other birders and I once tried to see how many birds we could find in Afghanistan in one four-day period in May. We felt very lucky at the end of our fourth day to find a Tawny Eagle perched at the dump as we entered Kabul. That was our 100th bird of the trip—a far cry from the 200-plus species the Lab of Ornithology's Sapsuckers routinely log in one day during the World Series of Birding. So don't expect to run up your life list on a quick trip to Afghanistan.

My backyard list where I lived in Kabul was an exciting one. I remember hearing the bell-like song of Golden Orioles drifting through my window and seeing hoopoes collecting in-

DORANNE JACOBSON

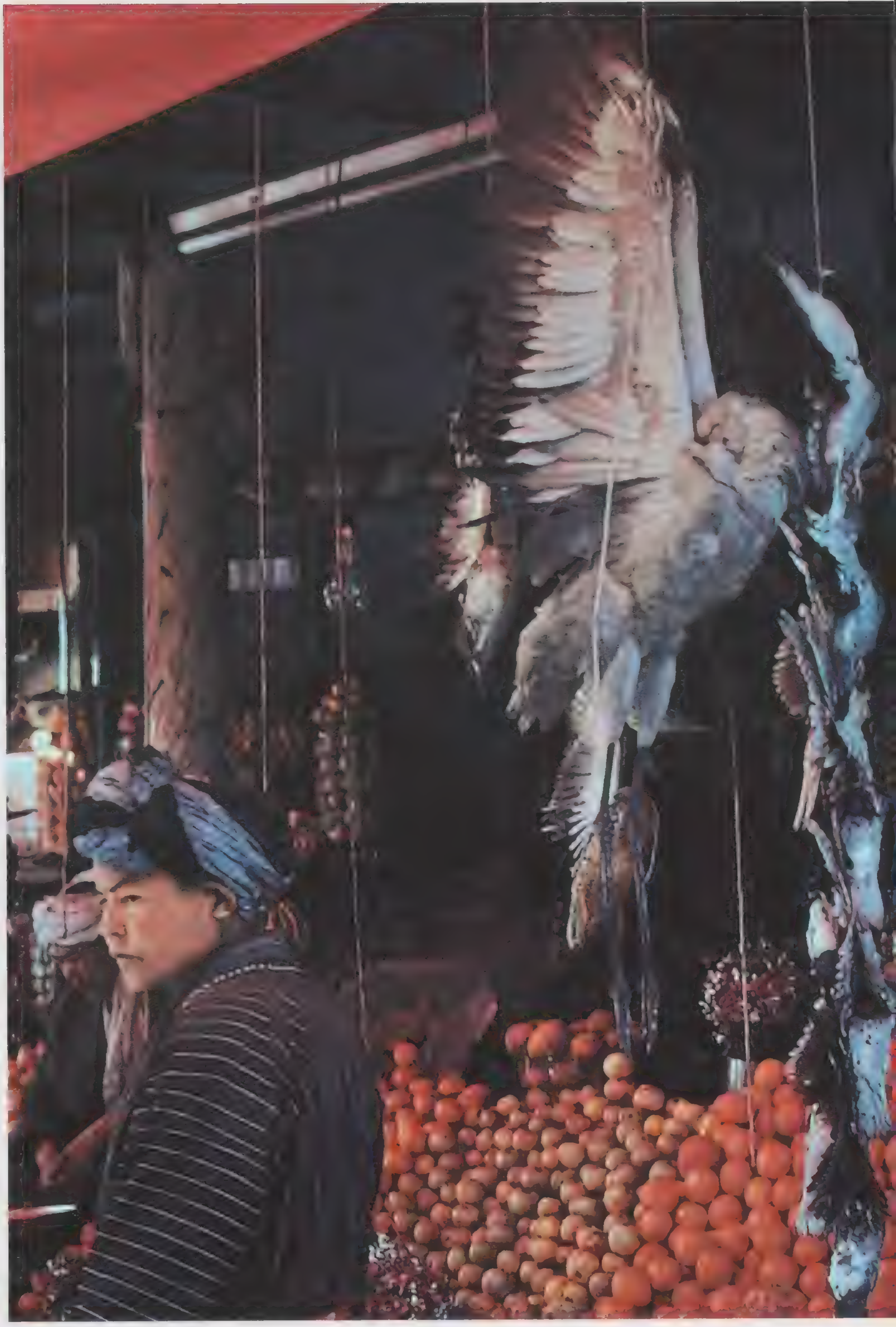
sects on our lawn. And I remember the House Sparrows—a species we regard as an exotic "trash" bird in North America—arriving as migrants in spring. Kabul backyards have also produced such specialties as Asian Paradise-Flycatchers and more noisy corvids than any of us wished to see.

During the 1970s, conservation efforts were beginning to make some small progress in Afghanistan, despite the prevalent opinion in governmental circles that in this desperately poor country, "people come ahead of wildlife." Ecotourism played a role in developing an interest in conservation there, but a United Nations team provided the real moving force, under the leadership of an able American, Ron Petocz, and his Afghan assistant, Kushal Habibi. The team produced an extensive report titled "National Parks and Utilization of Wildlife Resources" in the spring of 1977. And the following June, Mohammad Daoud, then President of Afghanistan, approved the establishment of wildlife and waterfowl sanctuaries at the Ab-e-Estada and the Dasht-e-Nawar. Unfortunately, President Daoud was overthrown the following April by a Soviet-supported Communist coup, and the country soon plunged into warfare, which is only now beginning to wind down after almost 24 years of bloodshed. During these catastrophic years, conservation efforts were impossible.

It is still too early in the process of restoring security to this war-ravaged country to recommend that any but the most daring adventure traveler go there to look for birds. I'm hoping that the country will become safer to visit during the next few years. Efforts to pacify the country and to remove thousands of land mines—which pose a daily threat to Afghan farmers, their families, and other people in the countryside—should make it safer for everyone and allow ecotourism to resume. Surely, as all of us know, birding can bring economic benefits, and Afghan governments in the future may encourage not only birding, but ornithological research and, more important, the protection and conservation of major bird habitats.

All of that, however, is in the future. For now, all we can do is encourage the international community to work together to restore peace and security to Afghanistan—for its people as well as its precious wildlife. I only regret that I will never again be able to watch the Siberian Cranes at Ab-e-Estada with Ron Sauey, who passed away tragically early a few years ago. But Ron was cofounder, with George Archibald, of the International Crane Foundation, and his vital work lives on through that organization. ■

Theodore L. Eliot, Jr., was the U.S. Ambassador to Afghanistan from 1973 to 1978. He is a member of the Lab of Ornithology's Administrative Board.



GEORGE ARCHIBALD/INTERNATIONAL CRANE FOUNDATION

Many of the Afghans that Eliot met couldn't understand why he and his friends just watched birds instead of hunting them. Above, a Common Crane and several other birds hang in an outdoor market.

A TOUCH OF ELEGANCE

Text and Photographs by Paul Zimmerman

Getting to know the Elegant Trogons of southeast Arizona

An adult male Elegant Trogon (right) is the personification of avian beauty. The species began extending its range into the United States in the early 20th century and now numbers about 100.

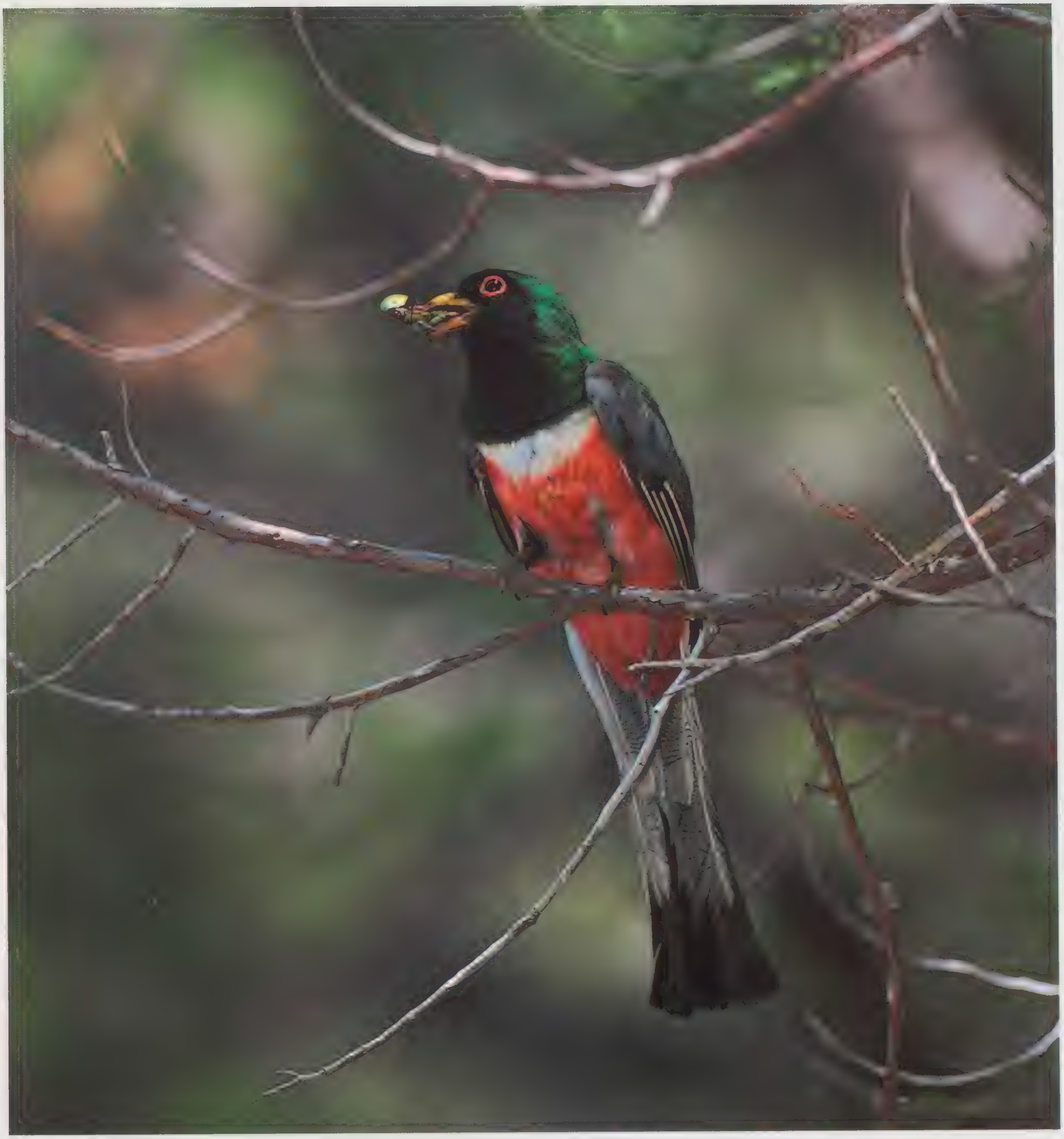
High on the wish list of birders who visit southeastern Arizona is the Elegant Trogon. This elusive bird draws perhaps 25,000 birders annually to four mountain ranges along the Arizona-Sonora border, which contain virtually the entire United States breeding population of the species, currently estimated at 100 birds.

Initially known as the Coppery-tailed Trogon, the species was graced with its present name by the American Ornithologists' Union in 1983. And it's an appropriate name, because the male's plumage personifies avian elegance—iridescent, emerald-green upperparts, bright orange eye ring, lemon-yellow bill, white breast band, scarlet abdomen and undertail coverts, and, depending on the light, copper or olive hues on the upper tail surface. The female is more somber—milky-white eye ring with a tear spot, coffee-colored upperparts, off-white breast band, and pinkish-red abdomen. The female's upper tail surface always appears coppery-colored.

Ornithologists speculate that this Neotropical species began extending its range northward into Arizona around the turn of the last century. It has obviously done so very gradually and inconspicuously—records of the Elegant Trogon's presence here are sparse from the late 1800s into the early 1900s, and the first nest wasn't discovered until 1939.

Finding Elegant Trogons in the thousands of square miles represented by the four mountain ranges seems akin to finding a diamond in a hailstorm. However, Richard C. Taylor, author of *Trogons of the Arizona Borderlands,* has narrowed it down. In his view, birders have the best chance of a sighting in Sycamore Canyon in the Atascosa Mountains, Madera Canyon in the Santa Rita Mountains, Garden and Sunnyside canyons in the Huachuca Mountains, and the Cave Creek Canyon South Fork Complex in the Chiracahua Mountains.

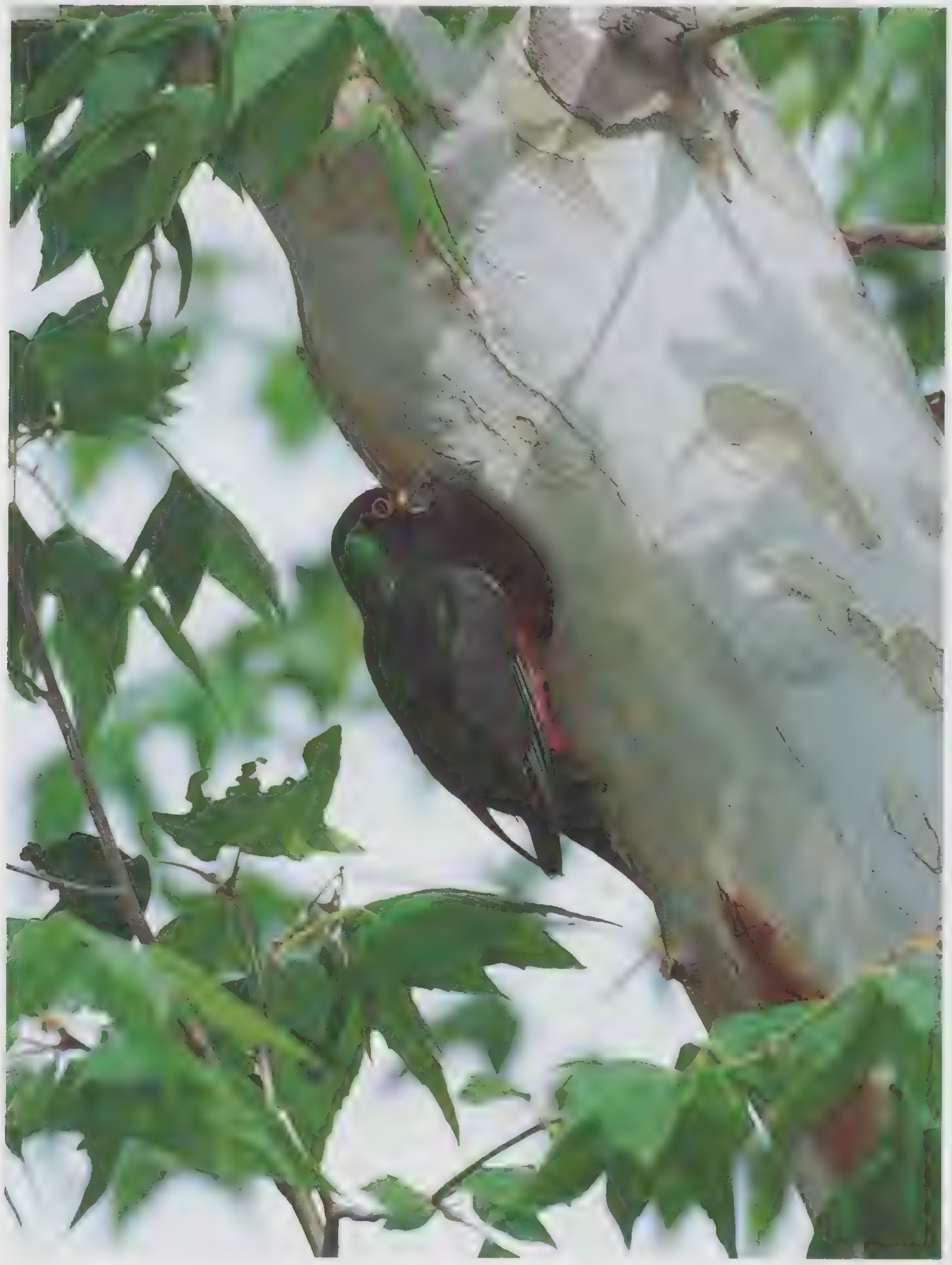
These "sky islands" have picnic sites and miles of hiking trails, with lodging, dining, and camping facilities (often primitive) reasonably nearby. The term "sky island" was coined in 1967 by local journalist Weldon Heald to describe borderland mountains separated from one another by expanses of desert or valleys of grassland. (A coalition of conservation groups has developed the Sky Islands Wildlands Conservation Plan aimed at protecting 17.3 million acres at the center of which are the Sky Islands—four mountain ranges encompassing 9.9 million acres.) These island mountains span several life zones and are known for their exceptional biological diversity, harboring unique floral communities, mammals such as the white-nosed coati, ringtail cat, cliff chipmunk, and Apache fox squirrel, and a number of bird species, which, like the Elegant Trogon, are at or near the northern limits of their ranges. Regular bird sightings include the Zone-tailed Hawk, Whiskered Screech-Owl, Sulphur-bellied Flycatcher, Arizona Woodpecker, Painted Redstart, Montezuma Quail, Magnificent and Blue-throated hummingbirds, and many other species. More than 100 species of birds breed in Madera Canyon alone, and another 130 have been sighted there. The Southwestern Research Station of the American Museum of Natural History in the Chiracahuas, where scientists from all over the world come to do ecological research, displays a



collection of local flora and fauna, including nearly 250 species of birds and more than 70 mammals.

The habitat selected by the Elegant Trogon in these sky islands is the lush, riparian pine-oak woodlands between the desert floor and the forested highlands, at elevations between 4,000 and 6,000 feet. Within these woodlands, the typical territories the elegants stake out have miles of canyons and a rich diversity of trees, notably sycamores—breeding elegants rarely occupy territories lacking sycamores—and Arizona white oak, from which this bird plucks insects, usually while hovering in midair. The nest cavity, typically previously excavated by a woodpecker, will probably be in a sycamore, living or dead. The cavity will be some 10 to 40 feet high, the average being 25, and the sycamore will be near the bottom of a canyon next to a small stream or with another water source nearby.

Searching this habitat for Elegant Trogons from April into July is often less a matter of looking than listening. Although it's possible to pick out a perched bird amid the maze of foliage, it's not easy. This jay-sized trogon invariably perches erect with its tail pointing straight down, and it sits almost motionless, with no hopping about, fidgeting, or flicking its tail unless it is alarmed. The canyons are shadowed by towering mountainsides much of the day, but the elegant's territorial call is unmistakable—no other bird in the area sounds anything like it. It's an unmelodious call, quite harsh and nearly as strident as a raven's: a series of four to six repetitive notes, about one each second, which carries for perhaps a quarter-mile. Various accounts by different observers describe it differently, which makes you wonder if everyone is referring to the same bird. To my ears, the call is an imperative *ark ark ark ark,* with a rather metallic quality, something like a small engine refusing to start. Others describe it as *koink, co-ah,* and *kum,* though the latter may be interpretations of other calls in its repertoire.



A male Elegant Trogon brings food to its nestlings, high in the hollow of a sycamore tree.

The birds don't seem overly disturbed by humans. Off-roaders, picnickers, and others may unintentionally stress the birds, but many of these elegants seem to have developed a tolerant attitude toward people who display reasonable restraint. The birds almost have to be phlegmatic, otherwise they might be loved to death by enthusiastic admirers. Word of a nesting pair spreads rapidly among birders, and as few as a dozen elegants may share the spotlight for thousands of these admirers.

The pair I photographed seemed quite amenable to the presence of a human poised egret-like behind a tripod-mounted telephoto lens, and the birds unconcernedly went about their business of brooding and feeding their nestlings, periodically posing obligingly on nearby perches. On one occasion, the male alit not 15 feet away, peering intently behind me, then flew directly toward me, passing over within 2 feet of the top of my head, and perched beside me. I could have taken a step and touched its tail. It sat momentarily, then flew a few yards and made an abrupt, extremely agile turn toward a sapling, hovered a split second to snatch a large insect from the trunk, then flew to the cavity and fed the insect to its nestlings.

By late July, most of the young have fledged, and soon the Elegant Trogon's call is largely absent from the woodlands. These birds are usually silent after nesting, confining communications within their family mostly to soft calls. In autumn they supplement their diet of insects with small wild fruit, which they also usually take while hovering. Though the odd bird may stay in the area over the winter, most have departed by November.

The future of southern Arizona's Elegant Trogon, which is categorized as a subspecies (*Trogon elegans canescens*), is as iffy as it has been in the past. There is little reason to expect that there won't continue to be hikes and dips in the number of breeding pairs, or that the population will grow any faster than it has during the past 100 years; the birds only nest once each year, clutch size is from one to four eggs, two being the usual, and a goodly number of nesting attempts fail to produce fledglings, for one reason or another. The bird is a candidate for Arizona's list of threatened native wildlife. I hope, though, that the Aztecs were right about this symbol of the Arizona borderlands. "This gorgeous creature of mystery," notes Herbert Brandt in *Arizona and Its Bird Life,* "according to Aztec Indian lore, is possessed of the blessing of the gods." ■

Paul Zimmerman is a freelance writer and photographer based in Tucson, Arizona.

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The World's Best Sewage Pond and Other Delights

Willcox Lake, a large wastewater treatment holding pond in the Sulphur Springs Valley, is a great place to watch large numbers of waterfowl, such as American Wigeons (above) and Northern Shovelers (right). Roger Tory Peterson said it was one of the best sewage ponds for birding he'd ever seen.

BY MARCIA BONTA

TOM VEZO (2)

Watching birds and dodging tumbleweeds in Arizona's Sulphur Springs Valley

WELCOME BIRDERS, the sign said as my husband Bruce and I drove toward the shore of Willcox Lake in search of waterfowl. The great birding guru Roger Tory Peterson said it was one of the best sewage ponds for birding he'd ever seen. Willcox Lake is the larger of the Twin Lakes, two permanent holding ponds for the treated wastewater of Willcox, Arizona. During our visit on a cool, overcast January morning, the smaller lake was little more than a puddle because of the unusually dry winter, so we concentrated on Willcox Lake.

Surging masses of Northern Shovelers crowded the lake, but here and there we picked out occasional American Coots, Common Mergansers, Mallards, and a lone Ruddy Duck. At one point, we watched a Great Blue Heron catch a frog and carry it through the shallow water to the edge of the pond. But our best sightings were in the grasslands surrounding the pond, where Savannah Sparrows foraged and a Northern Harrier hunted a foot above the ground. We saw a steady succession of Loggerhead Shrikes perched on wooden stakes, eyeing the grasses closely for insect and rodent prey.

As usual, we got caught up in watching every bird go about its business, and we quickly fell behind our early-bird schedule. By the time we made our way to the nearby Willcox Municipal Golf Course ponds, the morning was no longer young. Staying well off the golf course itself, we were rewarded by American Wigeons and a Snow

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TOM VEZO

The Sulphur Springs Valley is nicknamed "Hawk Alley" because so many raptors gather there. Above, an adult male Northern Harrier courses over the grassland, searching for prey.

Goose on the pond and Horned Larks on a golf green.

As we strained our eyes for the more glamorous species purported to be in the area, a ruddy-faced man of about 70 drove up, parked, and extracted a well-used scope from his car. He introduced himself as the "self-appointed mayor of the sewer pond" and handed us his card. G. H. (Marty) Martin immediately picked out the one odd bird in a sea of American Wigeons—a Eurasian Wigeon that we could never have found without his help. He also offered a wealth of local birding information, far more up-to-date than Richard Cachor Taylor's *Birder's Guide to Southeastern Arizona.* Although the book was recently revised and remains a reliable guide for birders, the Willcox area has been busy establishing new viewing areas and selling itself as a prime birding destination. Unfortunately, we were a week late for the Wings Over Willcox festival, but numerous Sandhill Cranes were still wintering in Sulphur Springs Valley.

The valley extends 100 miles from Willcox in the north to Douglas in the south. Ranging in width from 15 to 25 miles, it is surrounded by mountains. Once a high (4,000-foot), flat, desert grassland, most of the valley was converted into irrigated croplands in the 1930s by Midwestern farmers fleeing the Dust Bowl. The winter fields of corn stubble eventually attracted portions of the Rocky Mountain and midcontinent populations of Sandhill Cranes. Cranes were first noticed there in the 1960s, feeding in open fields, and a 1970 census by the Arizona Game and Fish Department counted 870 of them. By the early 1990s, the winter crane population fluctuated from 9,500 to 12,500. Today, the area attracts as many wintering Sandhill Cranes as the famed Bosque del Apache National Wildlife Refuge in New Mexico. Sulphur Springs Valley is also nicknamed "Hawk Alley" because it is the best winter raptor-watching site in southeastern Arizona, hosting as many as 14 species.

Then there are the sewage ponds. According to Marty, a White-winged Scoter had showed up on January 15. Frederick Pratt, of Moretown, Vermont, who drove up as we were talking, told us he has come to the ponds for six years.

"You can't beat them for waterfowl," he said. "I've seen Semipalmated Plover, 200 Wilson's Phalaropes, a Dunlin, both Snowy and Great egrets, Forster's Tern, Bonaparte's Gull, you name it. This is a great place. You pretty much see every possible duck."

Marty's card modestly states, "I Watch Birds," and his goal, he told us, is to convince the city fathers of Willcox how important birding is to the community. Certainly the regional weekly newspaper, *Range News,* played up the Wings Over Willcox festival. The sponsors sold 754 tour tickets last year, and participants came from all over the country.

"We've seen cranes, Snow Geese, a Loggerhead Shrike, Sage Sparrows, White-crowned Sparrows, Prairie Falcons, a Yellow-headed Blackbird, and a Northern Harrier," Virginia

Dangremond of Middletown, Connecticut, told reporters. During the festival, Marty watched a Bald Eagle snatch a Sandhill Crane out of the air. After hearing all these tales, we were eager to try our luck.

According to Marty, noontime is the best time to see the cranes, and the best place is the Apache Station Wildlife Viewing Area, owned and operated by the Arizona Electric Power Cooperative. But his parting words were a bit worrisome: "The rest of the morning should be good, but it's going to be real windy in the afternoon." Just how bad could it be? we wondered.

The road led us along the western edge of the Willcox Playa, a large, dry lake bed extending south from the golf course and sewage ponds. Once a 50-square-mile lake, it is now an area of dunes at least 8,000 years old that partially fills with rainwater during winter. Against a background of blowing sand and barren mountains, we glimpsed hundreds of cranes flying up from sandy playas a quarter of a mile away. In the occasional flashes of sun, their gray plumage lit up and appeared a dazzling white.

As we turned down the entrance road to the Apache Station Wildlife Viewing Area, a Ferruginous Hawk wheeled overhead, one of several we saw during our drive. An American Kestrel perched on a fence post, and two Northern Harriers dove down into the shrubby ground cover. Northern Harriers proved to be the most common raptors we saw in "Hawk Alley," closely followed by Ferruginous and Red-tailed hawks. Indeed, we saw so many Northern Harriers, I began to suspect that every harrier in North America wintered in the valley.

As we reached the parking lot shortly before noon, cranes came wheeling toward us over the distant fields, in seemingly endless waves. They landed in the scrubby underbrush surrounding the viewing area, and from the top of the new walkway we had superb, close-up views. Their bugling calls, loud enough to be heard a mile away, were almost deafening. Overwhelmed by the sight and sound of the stately birds, we stood transfixed as thousands of cranes landed in dozens of discrete groups for as far as we could see.

For more than an hour we watched and listened, alone with the cranes on the windswept playa. Finally, we tore ourselves away. What we had seen were only the cranes from the valley's northern roost.

BRUCE BONTA

Our next destination was Whitewater Draw at the southern end of the valley, a portion of which is open to the public as part of a sport and wildlife restoration project of the Arizona Game and Fish Department. Marty had assured us that there were between 40 and 50 species of birds there, including a huge diversity of grassland species, as well as Least and Western sandpipers, Black-necked Stilts, American Avocets, and wintering Vermilion Flycatchers. Sandhill Cranes assemble in huge flocks for their midday rest period in and around Hyannis Pond in Whitewater Draw.

We were too late for a close rendezvous with the cranes, but because we had driven so far, we wanted to see if any other birds were at

One of the area's most avid birders is Marty Martin (above). His encouragement helped to convince the city of Willcox how important birding is to the area. The Ferruginous Hawk (below) is one of the more common raptors in the valley during winter.

TOM VEZO

MARIE READ

A flight of Black-necked Stilts cruises low across the water just before landing. These distinctive black-and-white birds are frequently seen foraging in shallow water at the edges of ponds and lakes.

the pond. By then we understood what Marty had been talking about. The wind was so fierce, we could barely keep our balance as we walked across the flat, open field toward the pond.

In the short grass, after a long stalk through the blowing dust, we identified a Lark Bunting keeping company with two White-crowned Sparrows. The pond itself had only coots and shovelers. But suddenly, on the far shore, a flock of long-legged birds flew in and began probing in the mud. Bracing myself against the wind, I steadied my binoculars. Twenty-four Long-billed Curlews seemed an ample reward for our sandblasted faces and the grit in our teeth. Even as we stood there, exulting in our good luck, the wind increased, and we dodged the tumbleweeds rolling rapidly along the ground as we hurried to the shelter of our car. The call of nature tempted me into the chemical toilet, which rocked in the howling wind. I kept trying to imagine the headlines if it took off with me inside.

Our little rental car offered scant protection against the enormous tumbleweeds—some as large as Volkswagen beetles—that spun across the gravel roads as we drove into the wind. While I called out warnings, Bruce dodged the tumbleweeds. The thickening dust darkened the sky until we could barely see, even though it was midafternoon. No one was around but us and a lone Northern Harrier that insisted on hunting in spite of the dust storm.

As soon as we reached the paved road and headed north again, the visibility improved, but tumbleweeds remained a menace until the open range gave way to fences that stopped them in midtumble. Although Bruce doubted that they would harm the car, a longtime local resident later assured us that the large ones could do significant damage. Keeping out of their way was definitely the best policy.

Near sunset we reached the Willcox Playa Wildlife Area. We saw no extraordinary birds as we walked the trails along the perimeter of the public property, but we were amazed at the difference between the adjacent cattle-grazed private land, which supported only occasional stunted trees and shrubs, and the cattle-free wildlife area, filled with large trees and shrubs and a luxuriant understory of golden grasses waving in the diminishing wind.

As the sun set, we watched thousands of Sandhill Cranes whirling in a fiery sky against a backdrop of mountains before settling down for the night far in the fields beyond the wildlife area's fence line. Birding in Sulphur Springs Valley had not only fulfilled our crane-watching expectations but had produced unexpected bonus birds in the midst of a dust storm. ■

Marcia Bonta is a freelance writer based in Tyrone, Pennsylvania, and a frequent contributor to this magazine. Her latest book is Appalachian Summer, *published by the University of Pittsburgh Press.*

FURTHER INFORMATION

The three-day Wings Over Willcox festival held every January includes birding and historical tours as well as seminars and a banquet. For information on the festival and accommodations, call (800) 200-2272.

Willcox is 80 miles east of Tucson off Interstate 10 and is an excellent jumping off point for birding at The Nature Conservancy's Muleshoe Ranch to the north and the Fort Bowie National Historic Site, the Chiricahua National Monument, and Cave Creek to the southeast. Of all the places we stayed during our three-week trip to southeastern Arizona, Willcox was our favorite. Not only was it economical, but the people were very friendly. For up-to-date birding information, call Marty Martin at (520) 384-0334.

Directions: From the main Willcox exit (340), follow Interstate 10 east 9 miles to exit 331, then take US 191 south for 8.7 miles. A few hundred yards before the Apache Station power plant on the right, turn left into the wildlife viewing area.

To find the southern Willcox crane flock, turn left onto route 191 from the Apache State Wildlife Viewing Area and follow the highway south 43.9 miles into the town of Elfrida. Where 191 bears left at a Y intersection, drive straight ahead on Central Highway. Drive 6.0 miles south and turn right (west) at the stop sign on Davis Road. Proceed 1 mile and turn left onto a good dirt road (Coffman Road). After 2.7 miles, watch for the Whitewater Draw Wildlife Viewing Area on the right.

TOM VEZO

Sandhill Cranes flying against a glorious reddish-golden sunset are a common sight at dusk in the Sulphur Springs Valley. They gather each winter by the thousands.

BHL

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Two for the Price of One?

BY GEORGE FENWICK AND DAVID PASHLEY

When hunting and nonhunting conservation groups come together to save the same habitat, everyone benefits—especially the birds

For perhaps a century or more, people interested in conserving gamebirds have been enormously effective at preserving vital habitat for hunted species and helping to boost their numbers. Meanwhile, people devoted to the well-being of nongame species have accomplished the same for a host of songbirds, wading birds, raptors, and other kinds of birds that are rarely hunted in North America. In many cases, these conservation efforts have taken place in the same habitats, and yet, incredibly, they have all too often been independent endeavors, with little or no coordination between the people or groups involved. Why is this so? Because conservationists have traditionally rallied around the birds and issues of interest to them, and the resulting divide has rarely been bridged.

Fortunately, we are finally beginning to understand that the goals of groups formed for different conservation purposes overlap in ecological terms far more than we previously realized. The larger conservation community is starting to work in a more coordinated and cohesive fashion to accomplish our common goal of preserving habitat. As the number of partnerships between these groups has increased, the differences between game and nongame interests have been disappearing, and together we are working more effectively than ever to preserve large expanses of healthy ecosystems. This is good news for all birds and the people who care about them.

To underscore our common habitat goals, we are presenting pairs of unrelated bird species (one hunted, the other not hunted) that depend on the same habitats. The benefits of unified, coordinated conservation strategies and programs among conservation groups are illustrated in each of these examples. ■

George Fenwick is president of the American Bird Conservancy. David Pashley is the group's vice president for Conservation Programs and U.S. coordinator for the North American Bird Conservation Initiative.

LARRY DITTO/KAC PRODUCTIONS

Greater Sage-Grouse and Sage Thrasher

GARY KRAMER

Pristine sagebrush habitat is rapidly vanishing across the West because of wildfires and overgrazing by cattle, sheep, horses, and other livestock. Exotic cheatgrass quickly invades these despoiled areas and in turn increases the frequency of fires, which knock out native shrubs and grasses. The result is a severely degraded plant community that has little to offer birds and the other indigenous wildlife.

Maintaining the remaining sagebrush communities will help preserve populations of birds such as Greater Sage-Grouse (right) and Sage Thrasher (above) that depend on this habitat. It will also benefit the Columbian subspecies of Sharp-tailed Grouse, Sage Sparrow, Brewer's Sparrow, and other priority species. How to restore areas already lost to cheatgrass is so poorly understood—and presumably expensive—that protecting existing areas of high-quality sagebrush habitat should be our highest priority.

MICHAEL H. FRANCIS

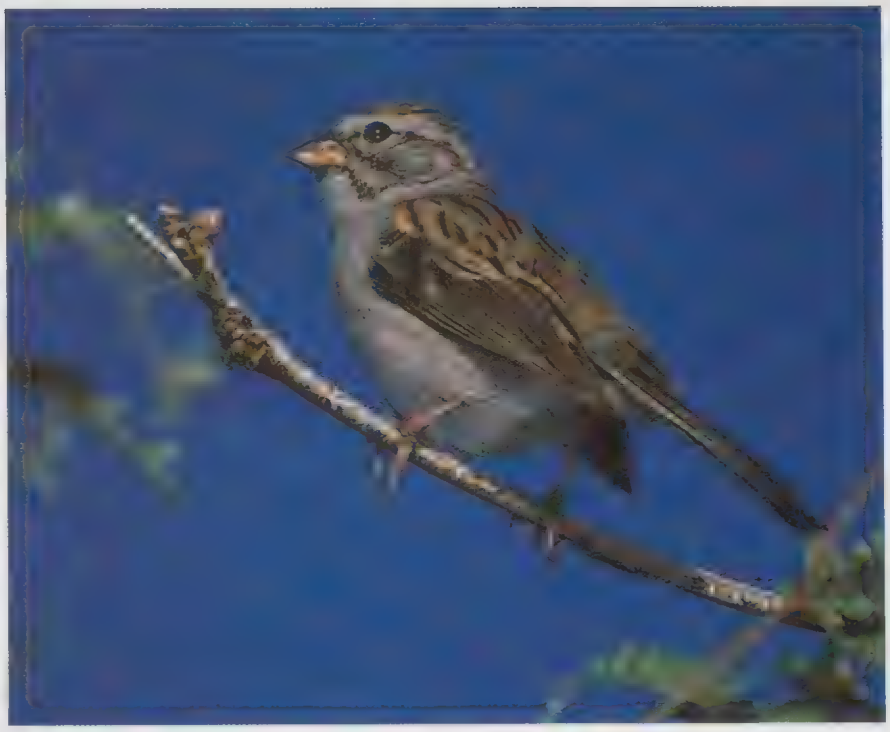
Wild Turkey and Worm-eating Warbler

The recovery of the Wild Turkey is one of the great success stories in North American wildlife management. The range and population of this species are probably greater now than at any time in history. Turkey habitat management is based on increasing the amount of deciduous woodland cover, which also benefits a wide variety of other woodland birds, including the Worm-eating Warbler in the East. And, of course, any conservation efforts taken on behalf of this warbler and other birds of the eastern deciduous forests also benefit Wild Turkey populations.

BRIAN E. SMALL/VIREO

Montezuma Quail and Rufous-winged Sparrow

Both of these species inhabit the rare and diminishing native desert grasslands of southern Arizona, New Mexico, and northwestern Mexico. The Montezuma Quail (below) tends to prefer oak savannah and the Rufous-winged Sparrow (right) tends to prefer open grassland, so both species suffer in areas that have changed from grass-dominated habitat to desert shrubland. Overgrazing by livestock since the late 1800s caused most of the loss of this habitat, and much of what remains is rapidly being carved up into ranchettes or changed in other ways that are incompatible with conservation efforts. It may be necessary to significantly decrease the amount of livestock grazing allowed if we are to maintain populations of these two birds and others, such as the Masked Bobwhite.



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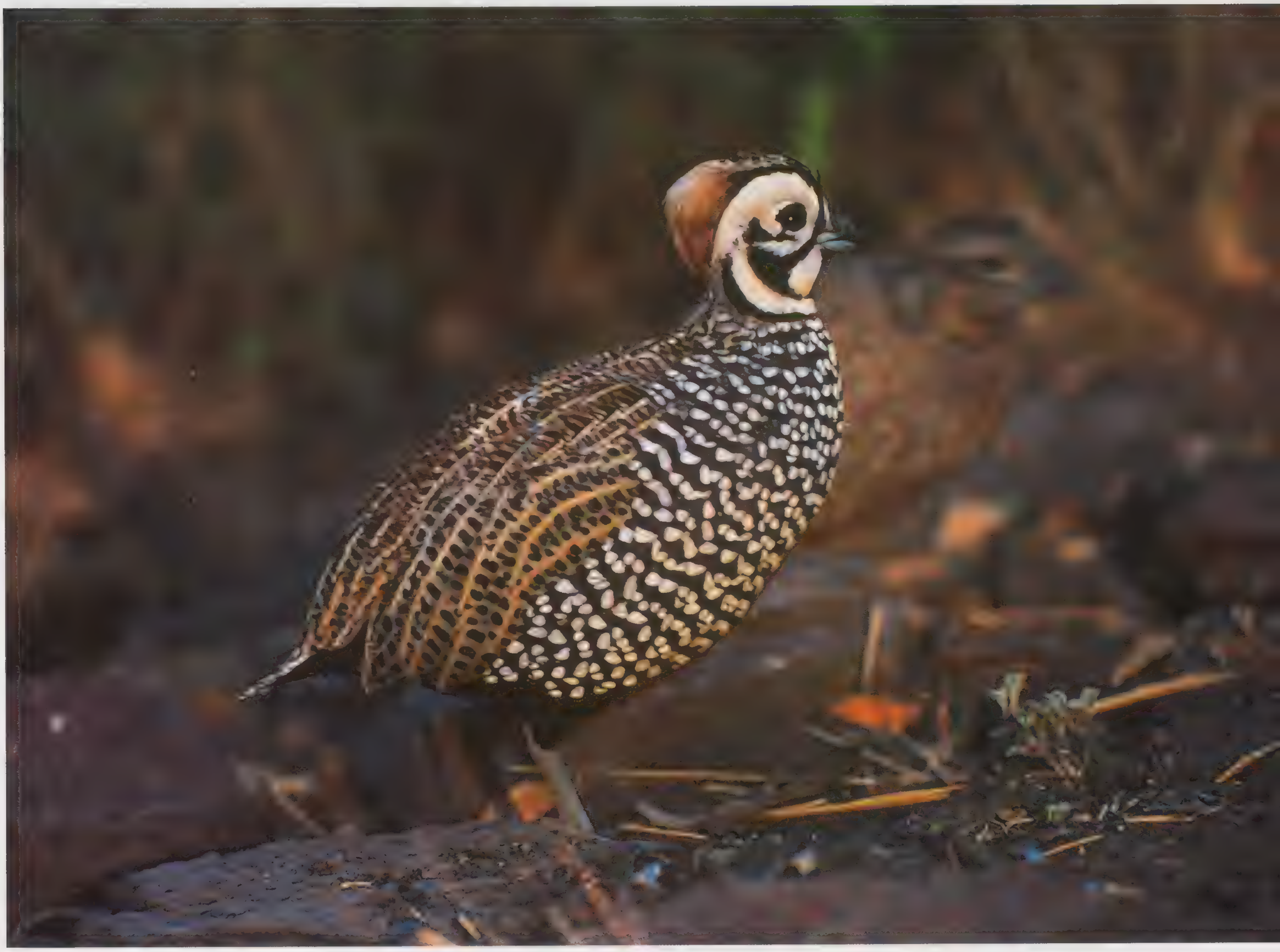

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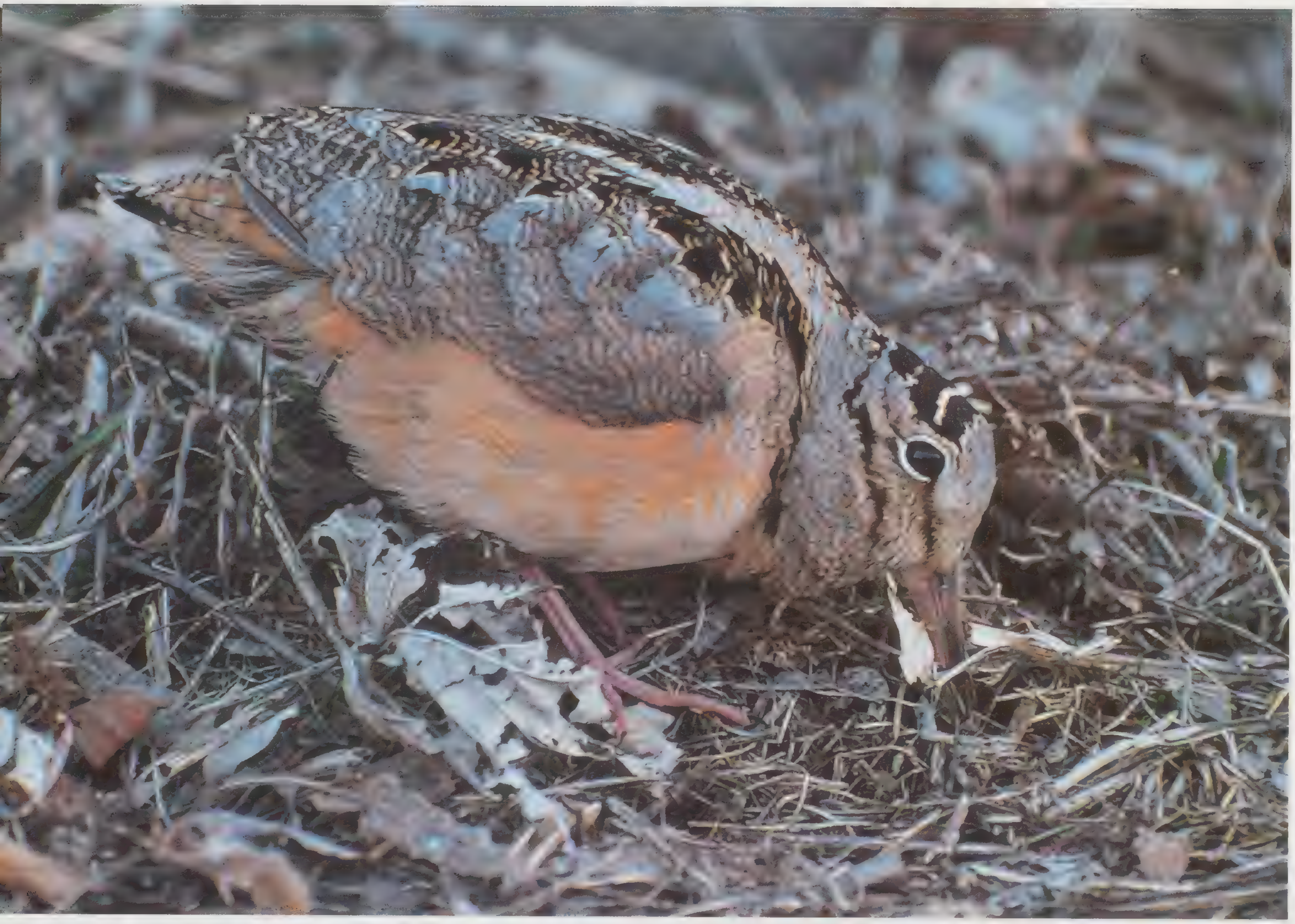

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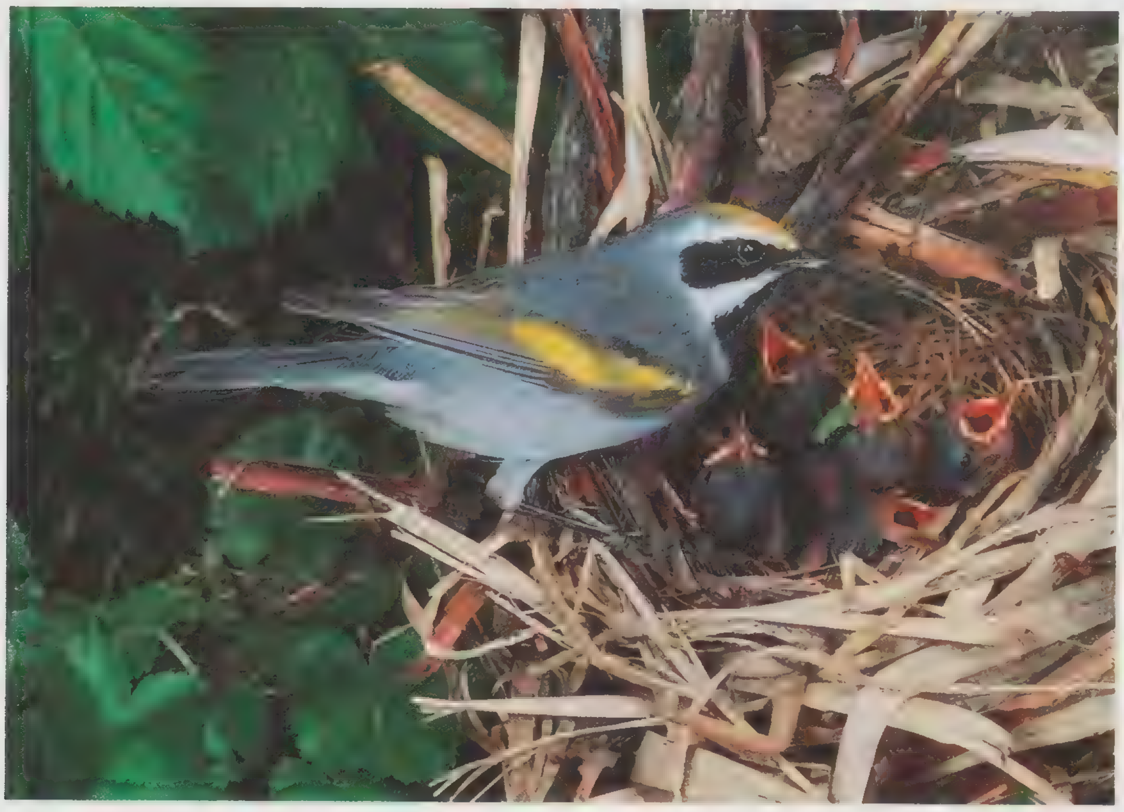


ISIDOR JEKLIN

American Woodcock and Golden-winged Warbler

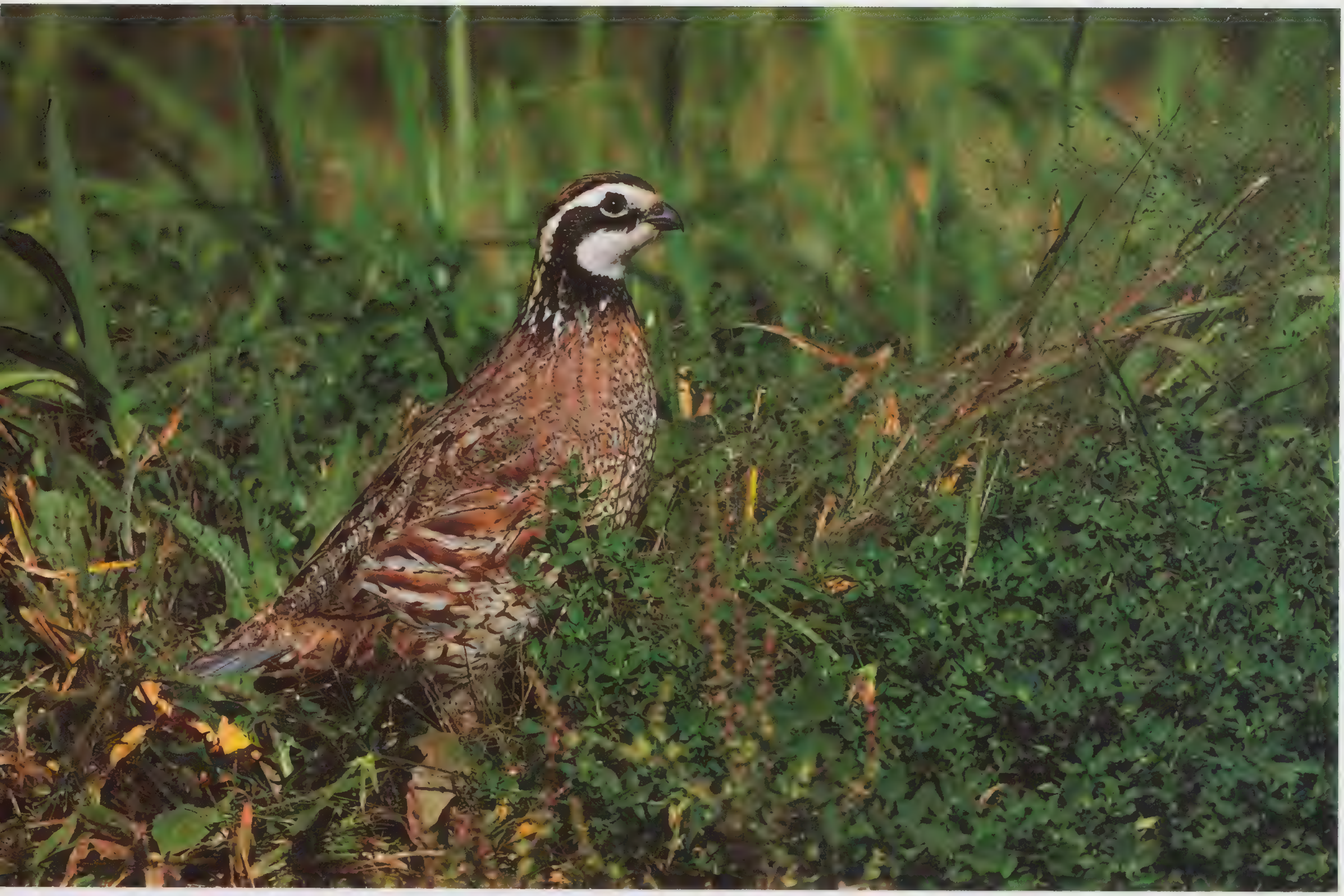
Both of these species breed in early successional habitats in the Northeast and Midwest. These conditions—and probably populations of these birds—peaked in the mid-1900s, as long-used cropland was abandoned and gradually began to become reforested. Farms are rarely abandoned now, and the farms that were abandoned decades ago are now largely covered with forest too mature to support these birds. Both the American Woodcock (above) and the Golden-winged Warbler (left) are in steep decline over much of their ranges, and only expensive, active management for early succession habitat can improve their status.

GARY KRAMER

Greater Prairie-Chicken and Henslow's Sparrow

These are birds of the eastern Great Plains now and both require the heterogenous conditions created over time and large spaces in taller grasslands. Greater Prairie-Chickens (left) need open areas for leks, so they can perform their elaborate courtship rituals, and taller vegetation for brooding their chicks. Henslow's Sparrows (below) need the rank conditions that develop several years after a disturbance such as a fire, but they don't tolerate the wooded habitats that take over after a prolonged lack of fire or other disturbance. Managing for prairie-chickens means creating a shifting mosaic of early to late post-disturbance conditions, with no section ever left long enough for woody growth to take over. Henslow's Sparrows will occupy the older patches in these areas. Unfortunately, this sort of disturbance regime over large areas of native grassland is exceedingly rare and both species—two of the highest priority birds for conservation in North America—have declined dramatically in recent decades.

GREG W. LASLEY/KAC PRODUCTIONS



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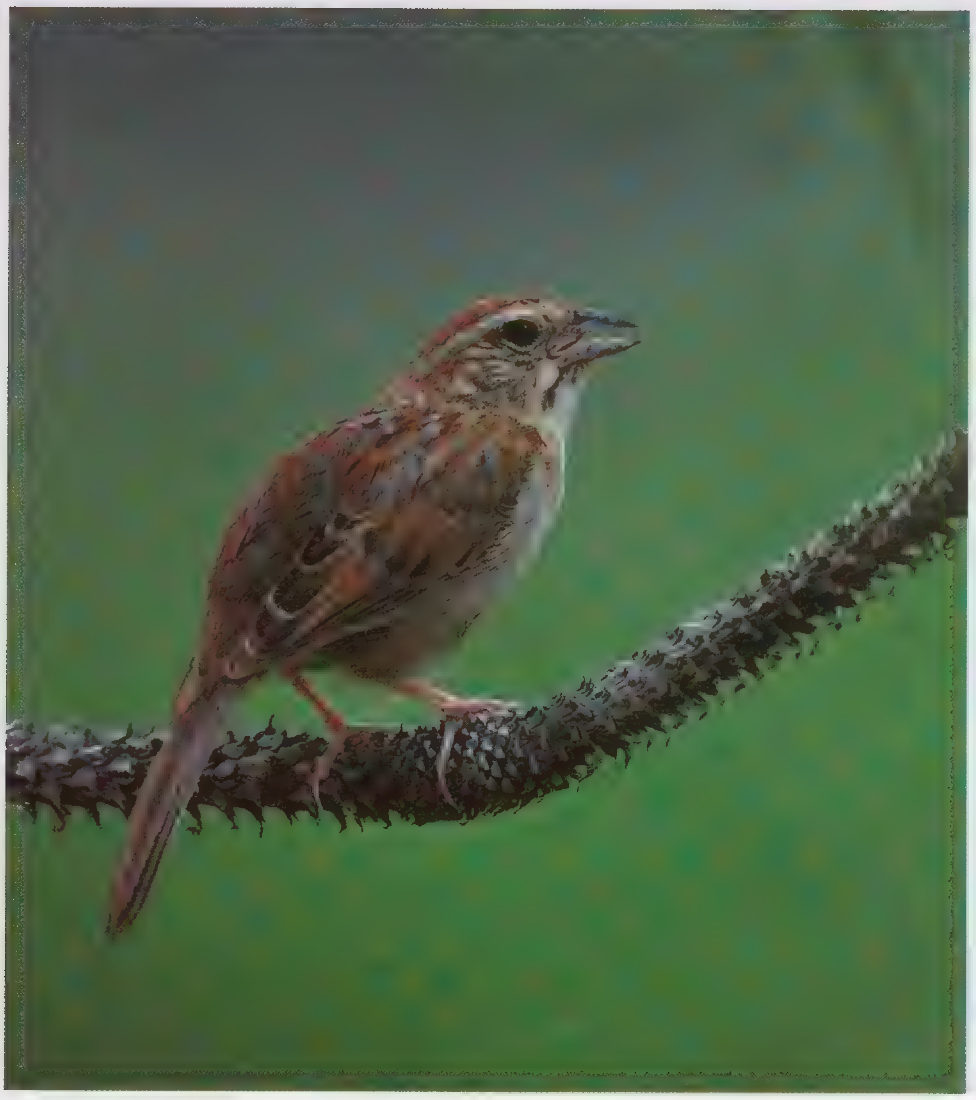


BRIAN E. SMALL

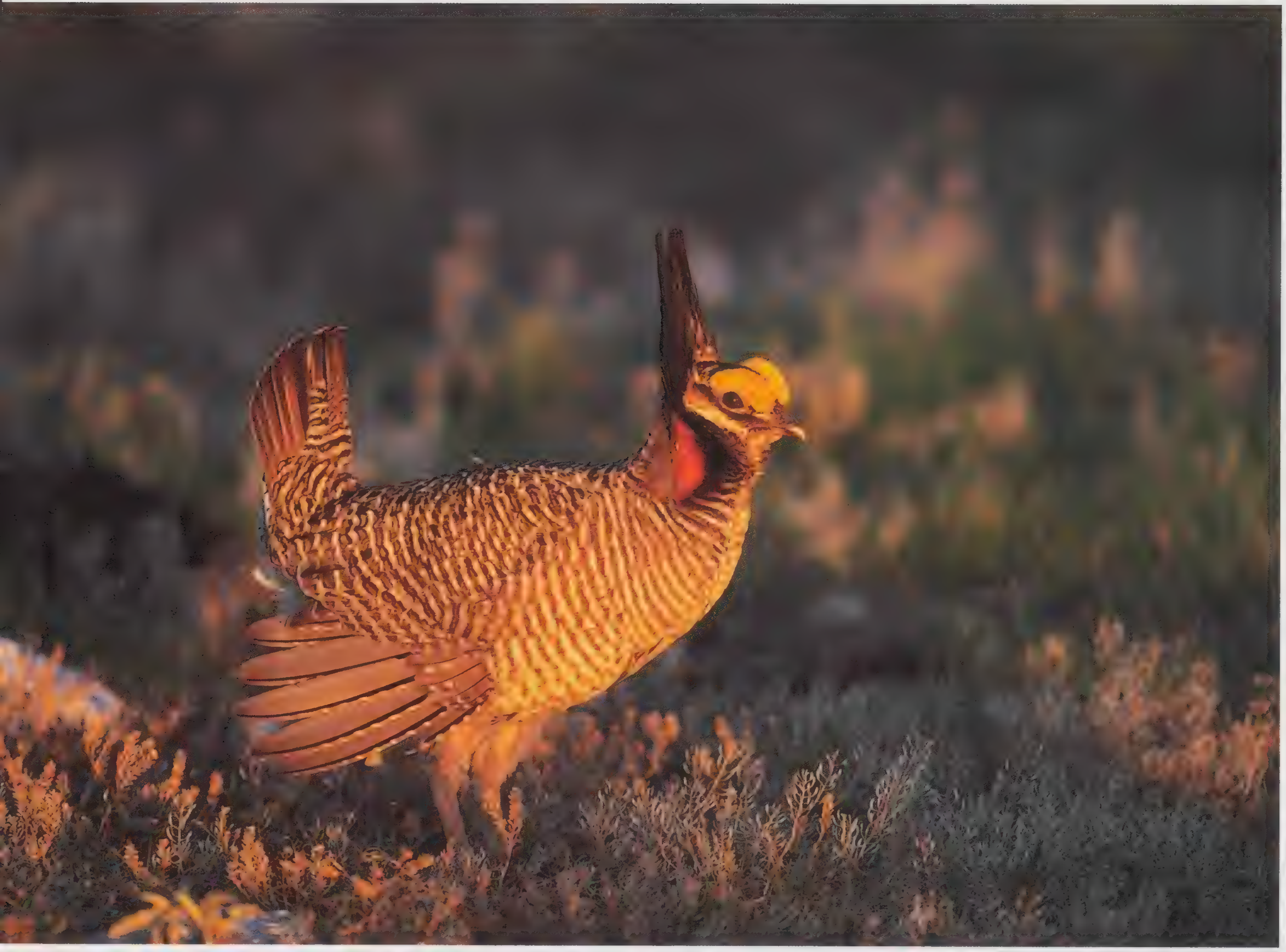
Northern Bobwhite and Bachman's Sparrow

Although the range of the Northern Bobwhite greatly exceeds that of the Bachman's Sparrow, wherever their ranges overlap, conservation efforts aimed at helping one of these species greatly benefit the other. The Bachman's Sparrow is primarily a bird of the longleaf pine ecosystem, where frequent fires maintain a bunchgrass-dominated understory, which is also perfect habitat for bobwhites. Numbers of both species have been declining steeply for several decades, due in part to the rapid spread of exotic perennial grasses that are replacing more beneficial native vegetation. The fact that virtually all of the bird species that depend on early successional habitats in the Southeast are declining, in spite of an abundance of pastureland and early postlogging habitat, shows that these human-created analogs of early successional habitat must lack some critical features.

GARY KRAMER (2)

Band-tailed Pigeon and Acorn Woodpecker

Both of these species depend heavily on acorns for food during at least part of the year. And the winter range of the pigeon broadly overlaps the year-round range of the woodpecker. One difference between them is that the continental populations of Band-tailed Pigeon (right) are plummeting whereas Acorn Woodpecker (above) numbers are increasing. The woodpeckers' tolerance for humans may be one reason for this difference: Acorn Woodpeckers adapt well to suburban habitats. But others have suggested that Band-tailed Pigeons are overharvested by hunters in winter when the birds come to salt licks.



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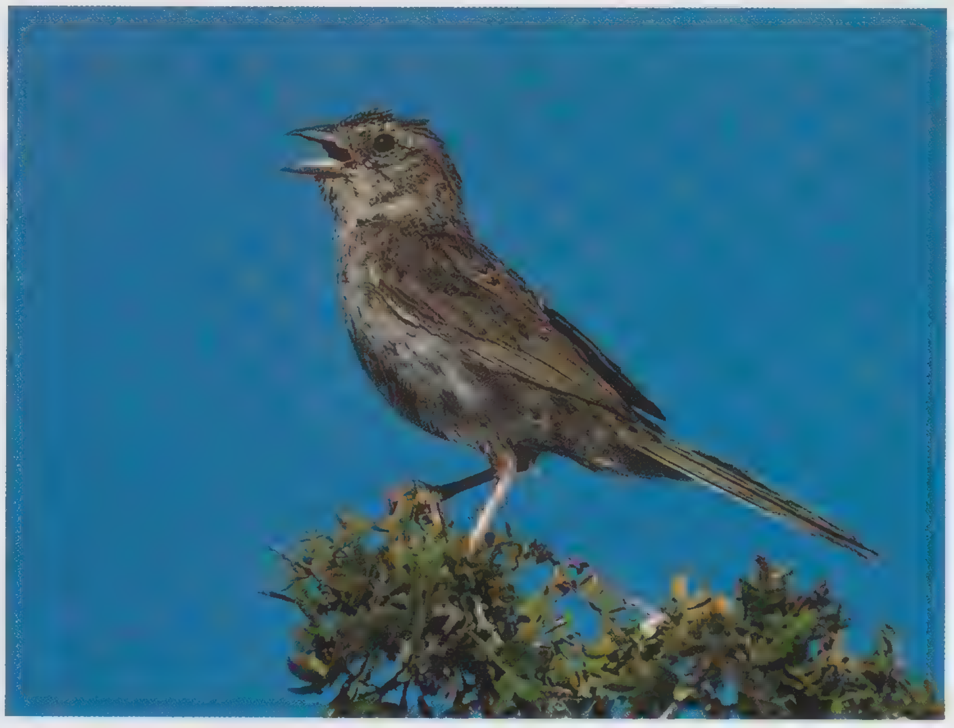

BRIAN E. SMALL/VIREO

Lesser Prairie-Chicken and Cassin's Sparrow

Lesser Prairie-Chickens (above) and Cassin's Sparrows (right) both require the low shrubby conditions of the shortgrass prairie. Low oak cover is used by both birds, and the Cassin's Sparrow can also thrive where mixed grazing and long disturbance-free periods promote invasion by woody plants. The Lesser Prairie-Chicken is one of the rarest birds in North America. Although the Cassin's Sparrow is still relatively common in its small range, the species' numbers have been dropping for several years. Converting scrub to farmland or ranchland is a major factor in the decline of these birds, and preserving their natural habitats is our highest priority.

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THE PUZZLE OF THE FISHER QUEEN

by *Jack Connor*

Why are female Belted Kingfishers more colorful than their mates?

The shorthand explanation of sex differences in bird plumages—"Same roles, same colors; different roles, different colors"—works like most good rules of thumb. It applies in all cases, except when it does not.

"Same roles, same colors" fits when males and females share parental responsibilities and also wear similar or identical plumages. This generally includes cormorants, geese, swans, herons, vultures, eagles, buteos, gulls, terns, owls, swifts, crows, jays, chickadees, and titmice, among others. Most adults in these groups look alike and act alike—dividing the burdens of nesting and care of offspring between mother and father more or less equally.

"Different roles, different colors" applies to ducks, grouse, hummingbirds, a number of blackbirds, and many other polygamous or promiscuous species. When males have multiple mates, keep harems, or play the role of "deadbeat dad," they are usually more brightly colored than their female partners. In phalaropes and the handful of other cases where females take multiple mates and leave most parental tasks to the fathers, they wear the more colorful plumage, in "reversed sexual dimorphism."

This pattern of roles and colors can also be found within some groups of related birds, pointing to mating systems that differ from the general pattern of the rest. Most adults of the order Falconiformes (hawks, eagles, and falcons), for example, act like their partners and look like their partners ("same roles, same colors"). Harriers, however, are exceptions on both counts: they are polygamous ("different roles") at least some of the time and also sexually dimorphic ("different colors"). The male takes multiple mates, if he can find and win them, and also wears a flashier, more eye-catching plumage than the females do.

Whistling-ducks make a converse example. Unlike other ducks, whistling-ducks have sexually monomor-

MARIE READ

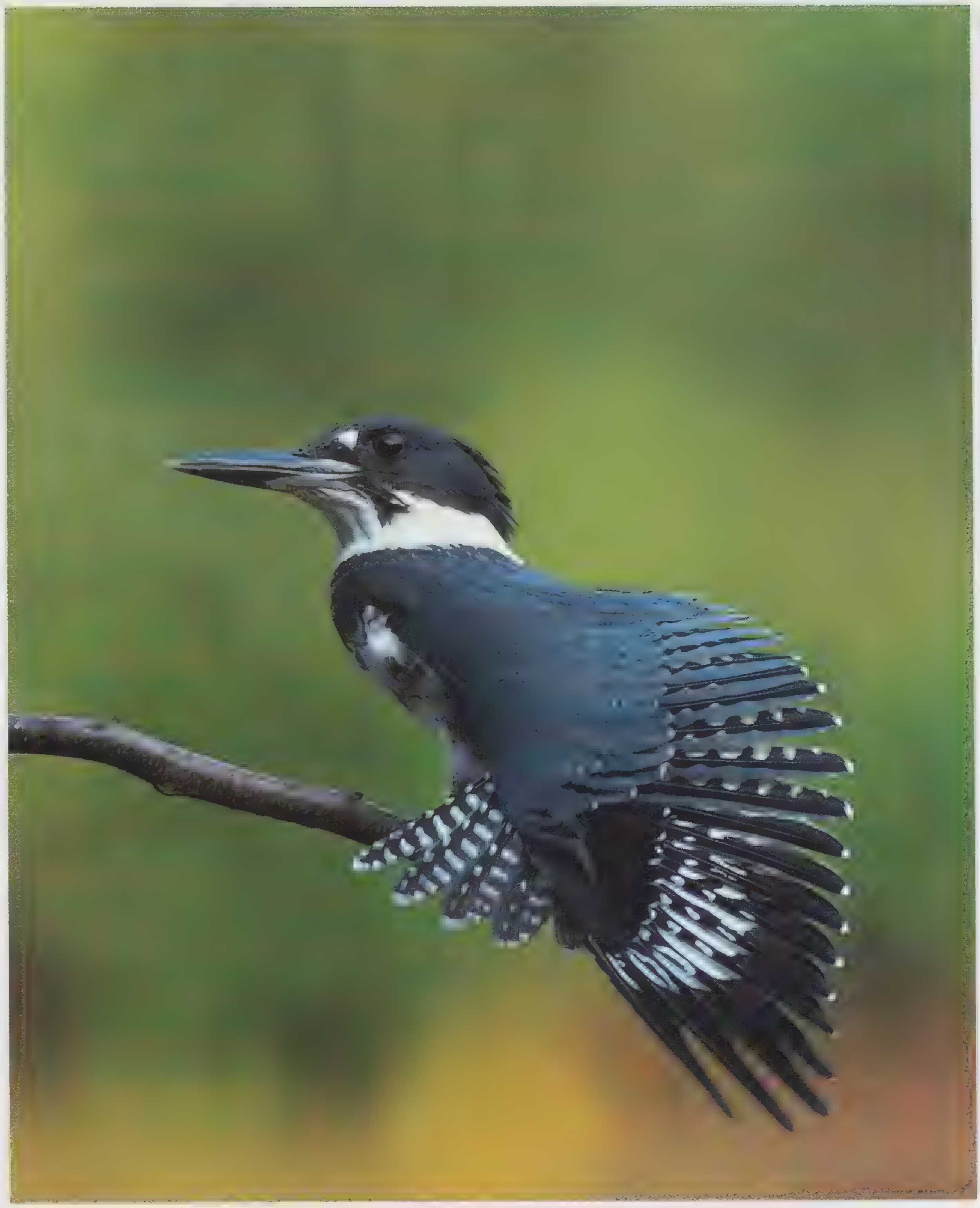
phic plumage; also unlike ducks (but like geese, perhaps their closer relatives), both male and female whistling-ducks participate in incubation and parental care—in other words, "same roles, same colors."

A rule of thumb can stretch only so far, however. The roles-and-colors pattern doesn't seem to fit woodpeckers or warblers, for example. Woodpeckers mate monogamously and generally share the parental responsibilities—both male and female build the nest, incubate the eggs, and feed the young—yet most species have sexually dimorphic plumage. Warblers present a complex mix of mating and parenting strategies and of plumage differences that also does not seem to fit a consistent pattern.

All of which brings us to my personal nominee as the possessor of the most puzzling plumage among North American birds. In fact, if anyone reading this is searching for a topic for a master's thesis, how about "Apparent Reversed Sexual Dimorphism in *Ceryle alcyon,* the Belted Kingfisher"? We need an explanation.

Fall through winter, male and female kingfishers live feisty, solitary lives, chasing members of either sex away from the best perches along the waterways where they hunt. During the nesting season, however, breeding pairs cooperate like model couples in a marriage manual—mating monogamously and dividing all responsibilities in what seems a fair and equitable arrangement. Both sexes help dig out the long tunnel to the nest (alternating their efforts), both incubate the eggs, both bring food to the nestlings, and both help feed the fledglings for a week to 10 days after first flight. Nevertheless, as probably every birder in America has heard repeated by one field trip leader or another, "Kingfishers are one of the very few North American birds in which females are more colorful than males."

I have repeated that factoid myself so often on my own field trips and extended it with the dubious claim that "This is an example of reversed sexual dimorphism" that I've begun to feel guilty about it. Kingfishers do not fit the m.o. of other reversed sexually dimorphic species: females do not mate polygamously; males do not care for the young alone. Why should their colors be reversed? *Are* their colors reversed?



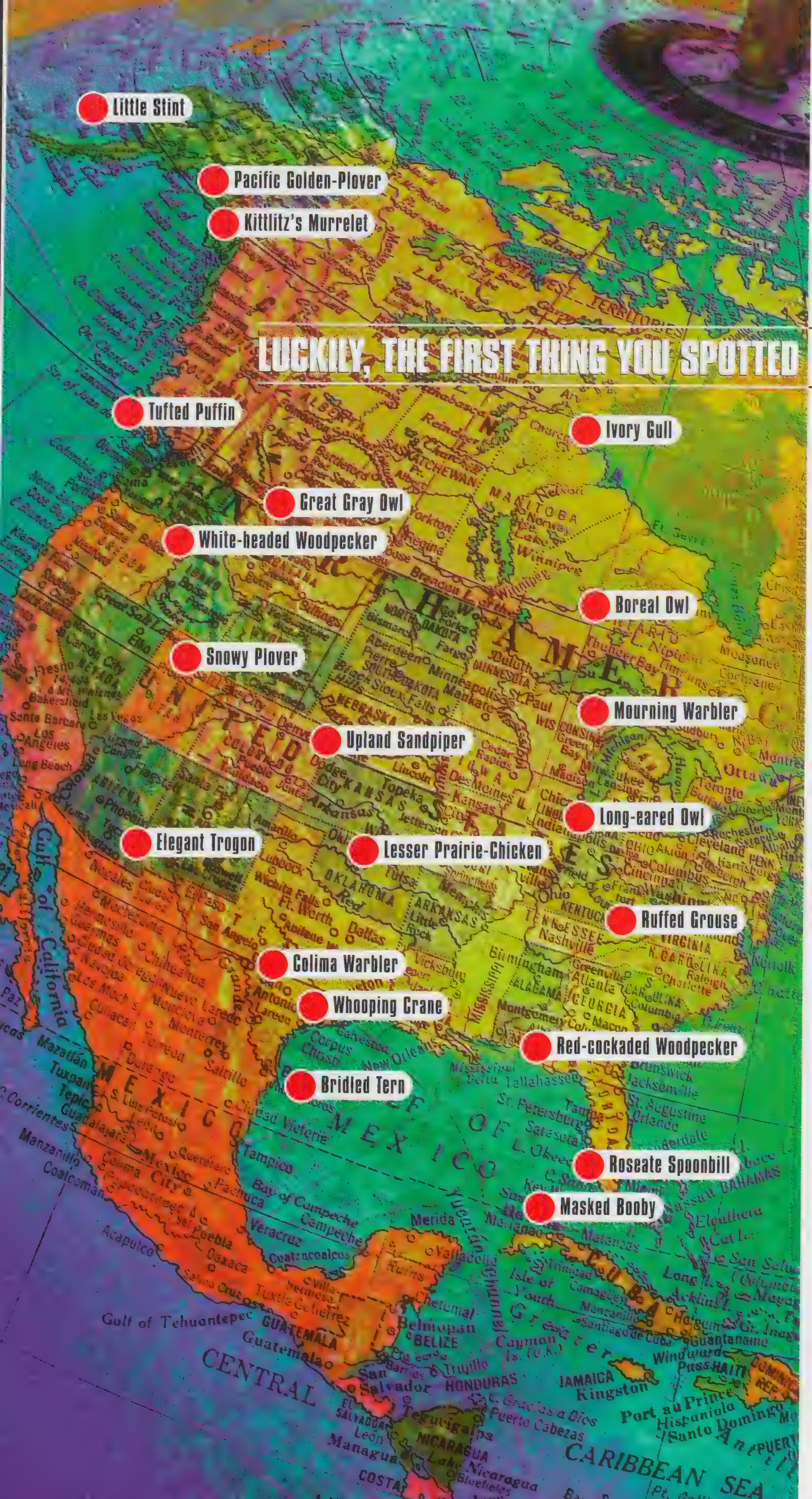
TOM VEZO

A female Belted Kingfisher (facing page) with her rusty belly band and flanks is easily distinguished from the more modestly colored male (above).

Paging through C. H. Fry's *Kingfishers, Bee-Eaters, & Rollers* (Princeton University Press, 1992), you will discover several other kingfishers with apparent reversed sexual dimorphism. In fact, females in four of the seven species of kingfishers in the Western Hemisphere—the Belted, Ringed, American Pygmy, and Green-and-Rufous kingfishers—show more colors than their male partners. The female Belted has three colors on her breast while the male has only two (white and blue, no rufous). The females in each of the other species have three breast colors to their mates' one.

But are we making a mistake in simply counting the colors and calling the gender with the higher count "more colorful"? Could the underlying sexual dynamic be hidden to the human eye because we appreciate colors differently than birds do? Do female kingfishers see something in their mates' patterns that we miss?

When Darwin first claimed that secondary sexual differences have evolved to serve the dual purposes of defeating rivals and seducing mates, it was his idea that female birds and other animals selected the most attractive individuals among their male suitors—in other words, executed "female choice"—that generated the most controversy. "No doubt," he wrote, "this implies powers of discrimination



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and taste on the part of the female which [seem] improbable, but I [will] show this is not the case." The possibility that the aesthetic preferences of female animals could influence the shapes and colors of the males of their species was too much for many of Darwin's contemporaries, including some of his closest allies. Even Alfred Wallace, the codiscoverer of natural selection, could not be persuaded.

Darwin stuck by his argument, nonetheless, comparing the effect female birds have on males of their kind to the effect poultry breeders have on domesticated chickens. "In the same manner as man can give beauty, according to his standard of taste, to his male poultry . . . so it appears that in a state of nature female birds, by having long selected the more attractive males, have added to their beauty."

The extent of the influence of "female choice" remains controversial today, although it is generally accepted that female animals evaluate their potential mates carefully, noting differences too subtle for human eyes or ears to perceive. Like birds, we are visually and acoustically oriented creatures, but our attraction to the sights and sounds of birds is mere coincidence. Those colors and those songs are meant for avian eyes and ears.

If Darwin was right, that "female choice" involves standards of taste—in other words, an aesthetic judgment—this could be part of the answer to the kingfisher's puzzling plumage. The truth might simply be that female Belted Kingfishers find the two-color breast in the male more attractive than a three-color pattern. The single blue line across the white background does seem a brighter, cleaner look—and is perhaps more visible at long range.

At least I have convinced myself of that recently. And I hereby promise to say nothing about reversed sexual dimorphism the next time my field trip group encounters a pair of kingfishers. Why they are dimorphic at all remains a puzzle, of course. Their role-sharing seems perfect for plumage-sharing too. But I'll happily grant them that mystery. If we could explain all there was to know about the birds of the world, the outdoors would be a duller place. ■

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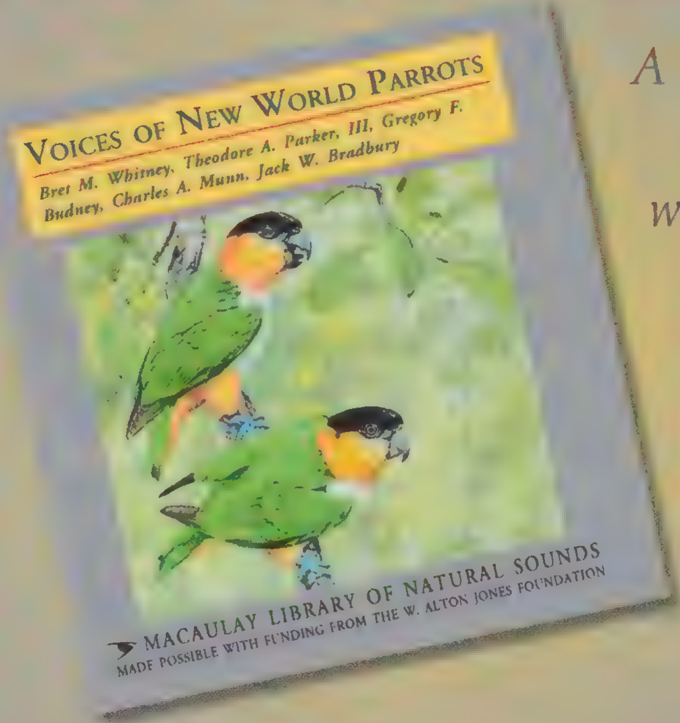
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THE PERFECT BIRDER

by Pete Dunne

I guess the folks in the Creation Department are Lab members or else a reader sent them a copy of my recent *Living Bird* column, "The Perfect Bird." They contacted me, said they liked my suggestions, and asked if I had any thoughts re: the Perfect Birder. Well . . .

The Perfect Birder would have 4x vision in front, 2x vision behind, night vision, and an infrared imaging center in the brain that would recreate a full-color image of a bird hiding behind foliage by measuring energy wavelengths. (Heck, the military's been able to do that for years.) Think how infrared imaging would revolutionize the study of tinamous.

The Perfect Birder could hear a pin drop on flannel two time zones away, has perfect pitch and the audio recall of Igor Stravinsky, plus automatic playback (for the times when some birding companion is talking over the bird) because, heard properly, the Perfect Birder can identify the song, call, wingbeat, sniffle, hiccup, sneeze, and belch of every bird on the planet (including species due to be split in the next 100 years).

In spring, the Perfect Birder's audio control center has an automatic robin filter to help hear past the din of the morning chorus during big days.

The Perfect Birder is impervious to heat conditions that could leach water out of stone, cold that would stop molecular motion, altitudes that would rupture the lungs of a White-tailed Ptarmigan, and humidity that replicates the atmospheric conditions of the womb.

The Perfect Birder would have an inner ear that could be put in a blender and maintain its equanimity, a stomach made of cast iron, and a built-in internal stabilizer to keep binoculars steady, no matter how badly the boat is pitching.

Owing to a skin that is part Gore-tex and part Kevlar, the Perfect Birder would be impervious to rain, sleet, snow, oobleck, cactus, green briar, fire ants, chiggers, and ticks. Every hour, minute pores would coat exposed skin areas with solutions of number 29 sun block and 99 percent pure DEET (to keep the blackflies away).

Of course, the Perfect Birder would know every field mark of every bird down to the submolecular level and have the illustrating skills of David Sibley, the verbal wizardry of Tim Gallagher, and would enjoy the universal respect of Kenn Kaufman.

The Perfect Birder's brother-in-law would be Victor Emanuel, who begins every Thanksgiving dinner conversation with the question, "Well, what tours to obscure, bird-rich corners of the planet should we develop for next year?"

It goes without saying that the Perfect Birder would be showered with free optics from all the top companies (who want their products seen in the hands of the Perfect Birder) and have a line of credit that draws directly from Fort Knox (to avoid having to rely on the generosity of his or her brother-in-law). Having already seen every known species of bird on the planet, the Perfect Birder would still never tire of seeing the same birds again and again (and in the process keep discovering new species to keep things interesting).

Despite an endless list of accomplishments, the Perfect Birder would have the humility of a monk. In the company of other birders, he or she would always let the other person identify the bird first, and in the event of a boo-boo, cleverly maneuver the errant birder toward the correct identification in a fashion that makes the birder think he corrected himself. When pointing out a bird to others, the Perfect Birder's directions would be flawless.

On an outing, the Perfect Birder would always bring enough lunch for two and always suggest a potty break just when you realize you need one. The Perfect Birder could eat anything without ever gaining a pound but would always save the last handful of potato chips for you.

What sex is the Perfect Birder? That's the best part. The Perfect Birder would always be the opposite of your sex.

What could be more perfect than that? ■

ILLUSTRATION BY JEFF SIPPLE

Costa Rica.
Afternoon of the 7th.
Carara Biological Reserve.
A Scarlet Macaw in the wild.
Currently endangered.

More than 850 different species of birds.
I might just migrate here for good.

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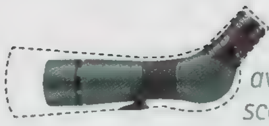

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LIVING BIRD

AUTUMN 2002 VOLUME 21 NUMBER 4

GREETINGS FROM SAPSUCKER WOODS

We've got good news and bad news in this issue. First, the good news: a small flock of Fuertes's (or Indigo-winged) Parrots—a species not seen since its discovery by Lab founder Arthur Allen and Leo Miller in 1911—was found recently in the high Andes by two Colombian ornithologists (see BirdNews, page 5).

Now, the bad news: despite an intensive search by a team of ornithologists (including bioacoustics researchers from the Lab, who set up remote recording devices and later examined 5,000 hours of recorded sounds), no convincing signs of Ivory-billed Woodpeckers were found in the Pearl River region of Louisiana this year.

And so, the last well-documented sighting of this species in the United States is still the lone female that artist and naturalist Don Eckelberry spent two weeks in April 1944 observing and sketching in Louisiana's Singer Tract. This was where James Tanner had done his extensive study of the last known nesting pairs of the species several years earlier.

Despite the presence of these nearly extinct birds and the intervention of the Roosevelt administration, which attempted to preserve this final stronghold, the logging of the Singer Tract continued full speed ahead. The trees were falling even as Eckelberry sat sketching this last bird and taking copious notes about its behavior. We're pleased to present several of Eckelberry's sketches here, drawn from life as he watched this last bird (see page 10).

Perhaps the rediscovery of the Fuertes's Parrot offers a brief note of encouragement; perhaps a few Ivory-billed Woodpeckers might also survive somewhere, deep in the southern woodlands. We can only hope.

Tim Gallagher
Editor-in-Chief

10 THE IVORY-BILL'S LAST STAND *by Tony Angell*
As World War II raged on in Europe and the Pacific, famed artist Don Eckelberry sketched one of the last Ivory-billed Woodpeckers ever seen in the United States.

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A journey through post-apartheid South Africa.

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What would a wild place be without uncertainty?

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by Pete Dunne
I say what you mean.

Front cover: The Chipping Sparrow is a common, widespread backyard resident across most of North America. Renowned nature photographer Tom Vezo took this portrait during the fall on Long Island, New York.

Right: At twilight in South Africa's Ndumo Game Reserve, three hippos take a sneak peek at the human visitors onshore. See article on page 18. Photograph by Tim Gallagher.

Back cover: A Cape Sugarbird, just one of the many great birds to be seen in South Africa. See page 18. Photograph by John Cancalosi.

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AUTUMN 2002 VOLUME 21 NUMBER 4

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Letters

COLLABORATING WITH HUNTERS

In the article "Two for the Price of One," authors George Fenwick and David Pashley ponder why conservationists and hunters have rarely worked on issues together. They suggest that "conservationists have traditionally rallied around the birds and issues of interest to them." I would like to expand this explanation. Having been a birder since I was 10 years old, I have a deep sense of appreciation and awe for the miracle that is survival. For these wild birds to be able to grow, reproduce, migrate, and thrive in our modern world is a feat that I could never begin to understand. As I watch Snow Geese land in my local wetland, I am moved by what I do know—miles of flight, an unerring sense of direction, and what must be a tremendous relief to find a spot to land. To watch hunters approach these exhausted, possibly still disoriented birds, and fire shotguns into them has been one of the most heartbreaking scenes I have witnessed.

I do not understand this "trophy" mentality. My relationship with birds is as a witness to their indispensable role in their ecosystems and to the beauty of their natural history. It is for this reason that I do not find it in me to work collaboratively with hunters, in spite of the habitat "protection" their organizations profess to support. Possibly some of your readers feel the same.

Barbara Novelli
Santa Cruz, California

THE IMPERFECT BIRDER

I am writing regarding the enjoyable article "The Perfect Birder" by Pete Dunne in the Summer 2002 issue. The list covered everything regarding the birder's ability to bird, but left out everything regarding the birds themselves. One cannot in good conscience enjoy birds and remain unaware of and inactive in their conservation and general well-being.

The perfect birder would be able to observe a bird without disturbing it and would never put the desire to see a certain bird over that bird's safety and well-being. The perfect birder would stay informed and involved in the issues facing bird and habitat conservation. The perfect birder would also never go on private property without permission.

Let's all enjoy birds, but not at the birds' expense.

Chris Crowe
Rockville, Maryland

I thoroughly enjoy Pete Dunne's column, The Catbird Seat. He never fails to be humorous while still saying something interesting or important. However, I have a bone to pick with his Summer 2002 column, "The Perfect Birder." It is the usual Pete almost down to the very end. Yet, when he gets to the punch line—"What sex is the Perfect Birder? The Perfect Birder would always be the opposite of your sex"—he forgets that there are many gay and lesbian birders out here in birderland, who, obviously, would not prefer the perfect birder to be of the opposite sex. Pete, please don't forget about the other 10 percent or so of us.

Eugene C. Loring
Green Valley, Arizona

We welcome letters from readers. Write to The Editors, *Living Bird,* 159 Sapsucker Woods Road, Ithaca, New York 14850, or send email to <livingbird@cornell.edu>.

Rare Parrot Rediscovered

This past July 28, Colombian ornithologists Jorge Velasquez and Alonso Quevedo made a remarkable find: they rediscovered a species of parrot that hadn't been seen in more than 90 years.

The Fuertes's (or Indigo-winged) Parrot (*Hapalopsittaca fuertes*) was initially discovered during a 1911 expedition sponsored by the American Museum of Natural History. Arthur A. Allen, founder of the Cornell Lab of Ornithology, and Leo E. Miller collected the type specimen of this parrot on August 31, 1911, high on a volcano in the central Andean highlands. They brought back seven specimens of the species, which was formally described by the museum's director Frank M. Chapman the following year.

The parrot was named after famed bird artist Louis Agassiz Fuertes, who had been an integral part of the Colombian expedition earlier but had left for home in June with Chapman.

"I have named this interesting bird in honor of Mr. Louis Agassiz Fuertes, in recognition of the service which, not alone as artist, but in many other capacities he rendered the Museum's Colombian expedition," wrote Chapman in the *Bulletin of the American Museum of Natural History* in 1912.

After Allen and Miller left the region, there were no more confirmed sightings of this species until this year, when Velasquez and Quevedo made their exhaustive search. Their notes, photographs, videotapes, and sound recordings offer the only solid evidence of the birds' presence in almost 91 years.

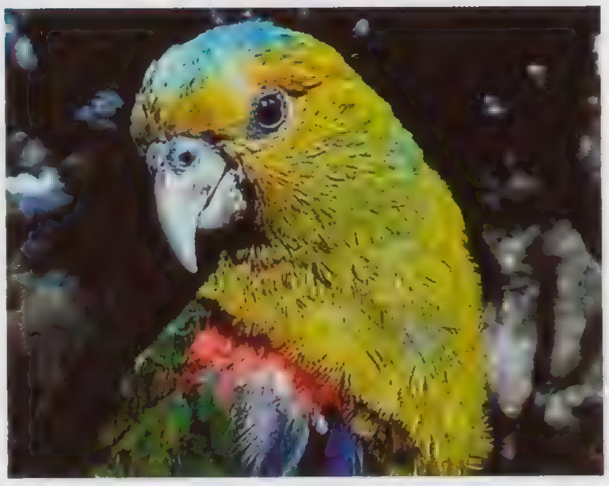
The two had been sent to the area by ProAves Colombia, a Colombian bird conservation group, and were supported by Paul Salaman from the Natural History Museum in London. The team received initial funding from the American Bird Conservancy and the World Parrot Trust. They were also studying the Rusty-faced Parrot, another rare Andean species, and are now receiving additional support from the Natural History Museum and the Institudo de Ciencias Naturales at the Universidad Nacional de Colombia. The team also recently won the Gold Award from this year's British Petroleum International Conservation Awards.

Velasquez and Quevedo had searched for months before spotting the birds. "Suddenly, a parrot's sharp cry pierced the gloom of the cloudy forest and was immediately joined by a chorus of other birds in the mist," says Velasquez. "The ghostly silhouettes of fourteen parrots spiraled downwards to alight in the trees nearby. In those few seconds, brilliant flashes of emerald greens, cobalt blues, and scarlet reds flashed before us. We thought we were witnessing a miracle from heaven as one of the world's rarest birds descended before our eyes."

According to Robert Prys-Jones of London's Natural History Museum, this was one of the greatest wildlife discoveries in Colombia. "Our hope for the species was dwindling," he says. "We were concerned that this spectacular parrot was lost forever."

James Gilardi, director of the World Parrot Trust, concurs. "The rediscovery of the long-lost Fuertes's Parrot is a great achievement for ornithologists and conservationists in Colombia, and underscores the fact that so many parrots linger on the brink of extinction," he says. "ProAves's accomplishment will inspire desperately needed conservation work in the Andes, promoting the recovery of this parrot and other species unique to the region."

But this remarkable species is far from being out of danger. Only 14 Fuertes's Parrots have been located, and they are surviving in just a few dozen hectares of forest—all of which face the immediate risk of being cleared to provide firewood, agricultural lands, and cattle grazing areas.



The Fuertes's Parrot had not been seen since its discovery in 1911.

Jorge Velasquez/Fundacion ProAves Colombia

"My team's task has only just begun," says Velasquez. "We must commence the vital job of protecting the species with great urgency."

One positive outcome of the bird's rediscovery is that the team has learned much about its ecological needs. Previously, little was known about the natural history and behavior of this parrot, which had never been studied closely or even photographed before. Fuertes's Parrots appear to require tall, mature trees, where they can feed on berries in the canopy and find nest cavities. Now that the team knows more about the bird's habitat and diet preferences, they hope to find other surviving flocks.

"From our experience with the critically endangered Yellow-eared Parrot, another species restricted to the Colombian Andes, we know that conservation efforts for these rare birds can succeed," says Mike Parr, vice president for Program Development at the American Bird Conservancy and author of *Parrots: A Guide to Parrots of the World.* "We now need to gain the support of as many people as possible to help fund and implement a comprehensive conservation effort."

THE PRICE OF AN OWL

by David S. Wilcove

Developing a comprehensive conservation plan for the Sonoran Desert

The whole incident, I must admit, had the feel of something illicit. Ten miles north of the town of Raymondville, Texas, I turned off the main highway and followed the dirt road to a secluded ranch house. I knocked on the door. When it finally opened, I smiled weakly and asked, "Are they here?" The woman nodded. "Follow me," she replied. I reached into my pocket for the money as she led me through the dark hallway and out into the backyard. "Look up there," she said with a smile, pointing to a large oak tree. Framed by green foliage and the deep blue Texas sky sat a softball-sized bundle of brown and white feathers: a Ferruginous Pygmy-Owl. A few minutes later, a second pygmy-owl flew into the tree, carrying prey in its talons. It then proceeded to tear a bit of flesh from the carcass and offer the morsel to its mate, who accepted it with alacrity. For the privilege of viewing these birds, I paid $35.

The Inn at El Canelo bills itself as "South Texas's best kept secret," but among bird watchers it is gaining renown as one of the best places to find the Ferruginous Pygmy-Owl, arguably the most elusive owl in the United States. For several years, a pair of the little birds has nested in a tall snag in the backyard, and the gracious innkeeper, Monica Burdette, has made a business out of showing them to grateful bird watchers.

The bulk of El Canelo's tourist revenue comes from hunters, many of whom spend days there in pursuit of white-tail deer, bobwhite, and other game. Bird watchers, in contrast, tend to be more transient, stopping by for a few hours in the morning or afternoon. But over time, these short visits add up, and I have no doubt that Ms. Burdette would agree with my assertion that the owls have been worth their weight in gold to El Canelo.

Although Ferruginous Pygmy-Owls have brought happiness and a little prosperity to south Texas, in Arizona they have created immense turmoil. In 1992, a coalition of environmental organizations petitioned the U.S. Fish and Wildlife Service to have the subspecies that occurs in Arizona and Texas, *Glaucidium brasilianum cactorum*, declared an endangered species.

Prior to the mid-1900s, Ferruginous Pygmy-Owls were relatively common in both Arizona and Texas. In Arizona, they inhabited riparian woodlands as well as mesquite-saguaro thickets in the southeastern corner of the state. In Texas, they occurred in subtropical scrub and woodland along the Lower Rio Grande Valley. Recent decades have been a time of explosive growth in the Sunbelt. A combination of residential and commercial development, overgrazing by livestock, and water diversion projects has destroyed most of the riparian forests in Arizona (and, indeed, throughout the Southwest), while thousands upon thousands of acres of saguaro and mesquite have been turned into housing developments, golf courses, and shopping malls. In the Lower Rio Grande Valley of Texas, most of the subtropical woodlands have been cleared for agriculture or converted to housing. Not surprisingly, the pygmy-owls have suffered. Indeed, during the late 1970s and 1980s, there appeared to be no reliable spot to find the species in the United States.

About a decade ago, however, biologists found a surprisingly large number of the birds in a habitat not previously considered all that suitable for the species: coastal plain oak woodlands and thickets north of the Lower Rio Grande Valley. At places like El Canelo Ranch (or the nearby King Ranch), bird watchers now have an excellent chance of adding this once-elusive owl to their life lists. But in Arizona, no such population rebound has been noted. Thus, in 1997, the U.S. Fish and Wildlife Service heeded the recommendation of the environmentalists and added the Arizona population to the endangered list.

To developers, the prospect of a tiny owl slowing down future development was horrifying. Their predictions were predictably apocalyptic. Protection of the owl "poses a serious threat to the economy of Arizona," proclaimed one attorney representing homebuilders. "It could halt everything from new housing developments to road building to fire-prevention activities on public lands." And, indeed, there were a number of nasty conflicts. Construction of a new school in an overcrowded district, for example, was delayed for a couple years by litigation over pygmy-owls. Tempers flared.

But in Pima County, which contains both pygmy-owls and the rapidly growing city of Tucson, some community leaders, environmentalists, and developers came to a different realization. They understood that the Endangered Species Act wasn't going to disappear anytime soon, and the human population around Tucson was unlikely to stop growing. Most important, they recognized that the pygmy-owl was simply the first of a long list of southwestern plants and animals edging

KEVIN KARLSON

"Framed by green foliage and the deep blue Texas sky sat a softball-sized bundle of brown and white feathers: a Ferruginous Pygmy-Owl."

toward extinction. Ignore the owl and another species would eventually take its place on the endangered list, igniting a similar controversy. Together they vowed to get ahead of the curve by developing a comprehensive conservation plan for the Sonoran Desert that would encompass not only the needs of the pygmy-owl but those of other rare plants and animals. If approved by the U.S. Fish and Wildlife Service, the plan would create a blueprint for future development in the county, a plan that could avoid future endangered-species "train wrecks."

For more than two years, a team of scientists has been working on the plan, focusing on 55 species, including 9 mammals, 8 birds, 9 reptiles and amphibians, 6 fish, 7 plants, 15 snails, and a pseudoscorpion. Joining the pygmy-owl on the list are such major and minor celebrities as the Western Yellow-billed Cuckoo, Burrowing Owl, California leafnose bat, Tucson shovel-nosed snake, and needle-spined pineapple cactus. Of these 55 species, only about a dozen are currently regarded by the federal government as threatened or endangered; the others are either headed in that direction or thought to be good indicators of the natural diversity of Pima County.

There's no guarantee that the Sonoran Desert Conservation Plan will succeed. More than a few people question the motives of those involved. "They've picked their critters carefully, as umbrella species, so they can control as much land as possible," fumed one local anti-environmentalist. Others worry that the plan will omit some sensitive species. But if it succeeds in bringing order to the chaotic pattern of growth in southeastern Arizona—if it protects natural areas and helps to safeguard the region's magnificent flora and fauna—then future generations will surely look back upon the Ferruginous Pygmy-Owl as a blessing rather than a curse. ■

Further Reading

Jensen, Mari N. "Sparing Species: Huge Research Effort, Sweeping Plan Poised for Scrutiny." *Tucson Citizen,* October 24, 2001.

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THE IVORY-BILL'S LAST STAND

BY TONY ANGELL

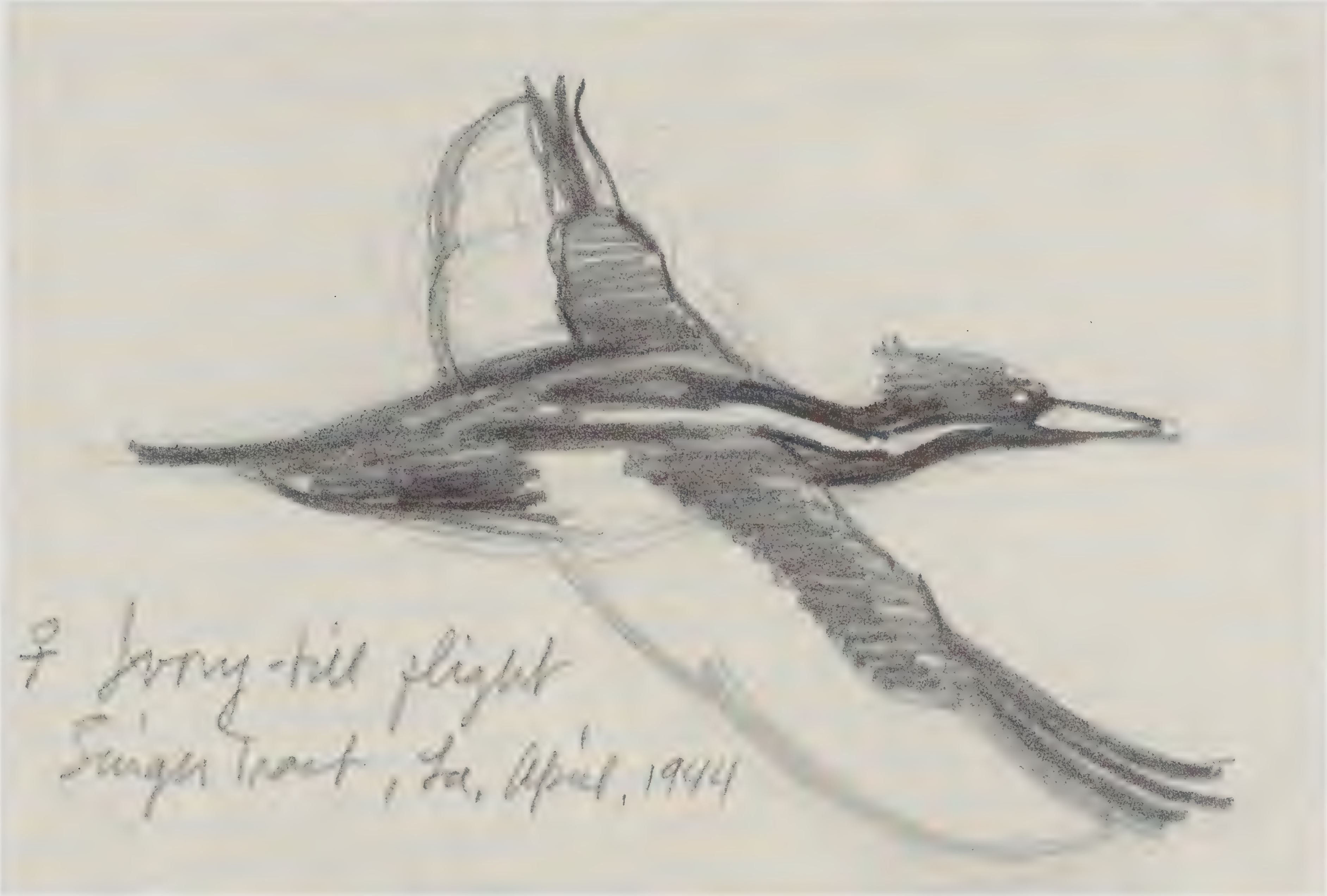
As World War II raged on in Europe and the Pacific, famed artist Don Eckelberry sketched one of the last Ivory-billed Woodpeckers ever seen in the United States

In early 2002, six highly qualified and experienced field ornithologists, working in three teams, spent a grueling month prowling the impenetrable country of the Pearl River in Louisiana, in an effort to determine whether the Ivory-billed Woodpecker *(Campephilus principalis)* still exists. The search was launched, in part, in response to a somewhat convincing report that a pair had been seen in this area. The field teams coordinated their efforts with the U.S. Fish and Wildlife Service, Cornell Lab of Ornithology, and Louisiana Department of Wildlife and Fisheries. The Lab set up 12 acoustic recording units in the area, which made continuous sound recordings in an effort to hear the ivory-bill's calling or drumming even if the researchers didn't see one. They found nothing.

It has been more than half a century since the last search for an Ivory-billed Woodpecker produced indisputable evidence that the bird still lived. In April of 1944, Don Eckelberry spent two weeks intermittently observing a female ivory-bill near Tallulah, Louisiana, taking notes and making field drawings of the bird.

Eckelberry later composed an essay based on his time in the field with the ivory-bill, which was published in a collection of nature essays entitled *Discovery: Great Moments in the Lives of Outstanding Naturalists,* edited by John K. Terres. For reasons now lost, the drawings and paintings were never published in their entirety. In 2002, following Don's

Three years after he made field sketches of a lone female Ivory-billed Woodpecker in Louisiana, Don Eckelberry created this vivid portrait of a nesting pair—a sight he was never to experience in life.



Don Eckelberry spent two weeks in April 1944, observing and drawing an Ivory-billed Woodpecker in Louisiana's Singer Tract. The drawings on pages 12, 13, and 14 are his field sketches of the bird. This was the last well-documented, undisputed sighting of this species in the United States.

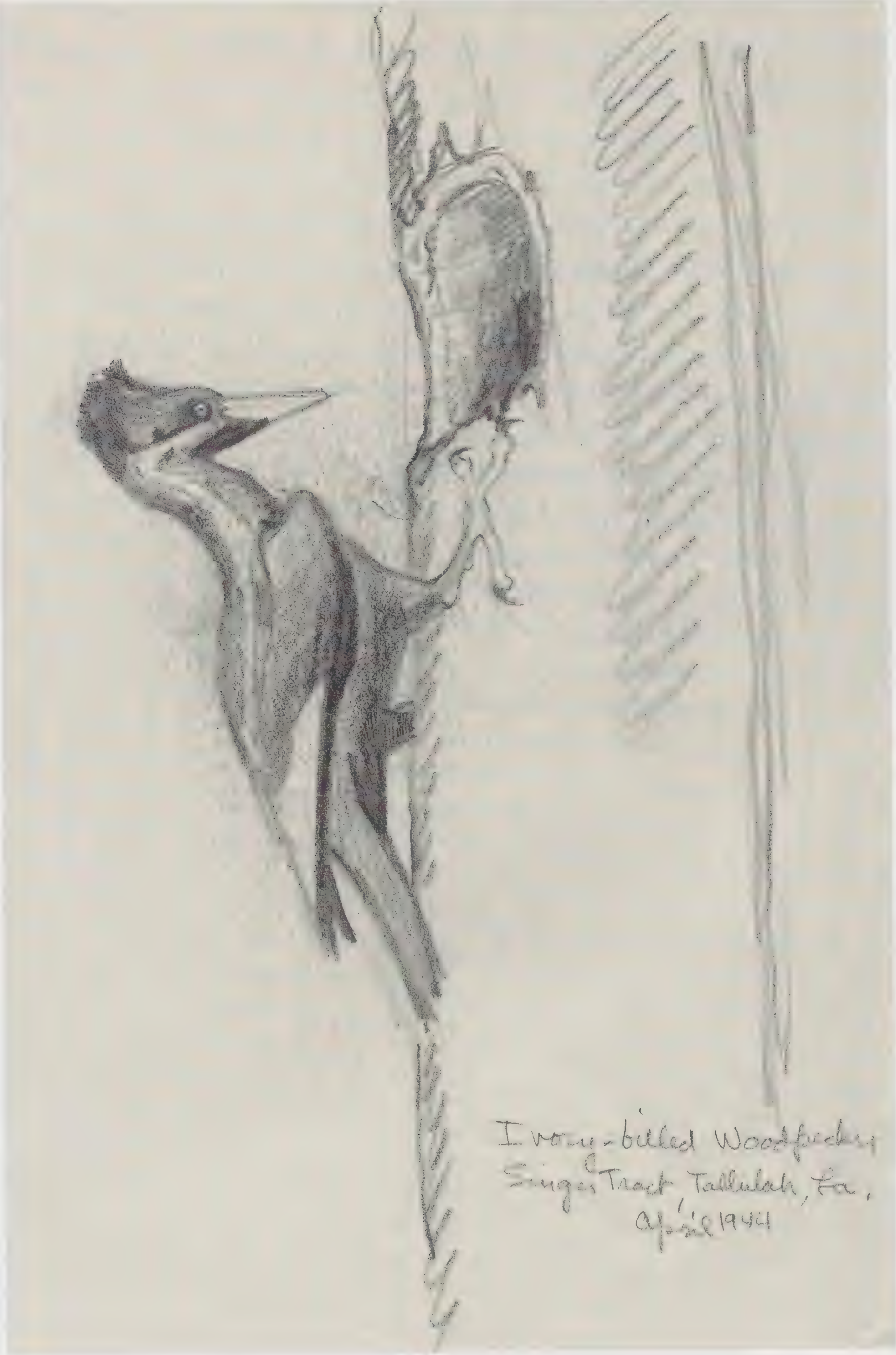
death, his widow, Ginnie, found his field journal, along with his drawings and paintings of the bird. This material, along with additional information supplied by Major Billy Faught of Biloxi, Mississippi, who, as a boy of 13, accompanied Don Eckelberry into the swamps looking for the woodpecker, provides the basis for this article.

In the spring of 1944, America was preoccupied with a series of distant military battles as World War II raged in Europe and the Pacific. Twenty-three-year-old Don Eckelberry, exempt from service because of a severe injury at birth that permanently impaired his ability to walk, was just beginning his career as an artist and naturalist and was preparing for a very different kind of expedition. Nervous and excited, he wrote to his boyhood pal, Ray Crewson, in Ohio, about his forthcoming trip to find, sketch, and paint what some believed to be the last living Ivory-billed Woodpecker: "I hope the damned bird hasn't up and died. Of course, even if it has, there will still be a story in it, but I would have missed a chance to see the species in life. Wish me luck fella!"

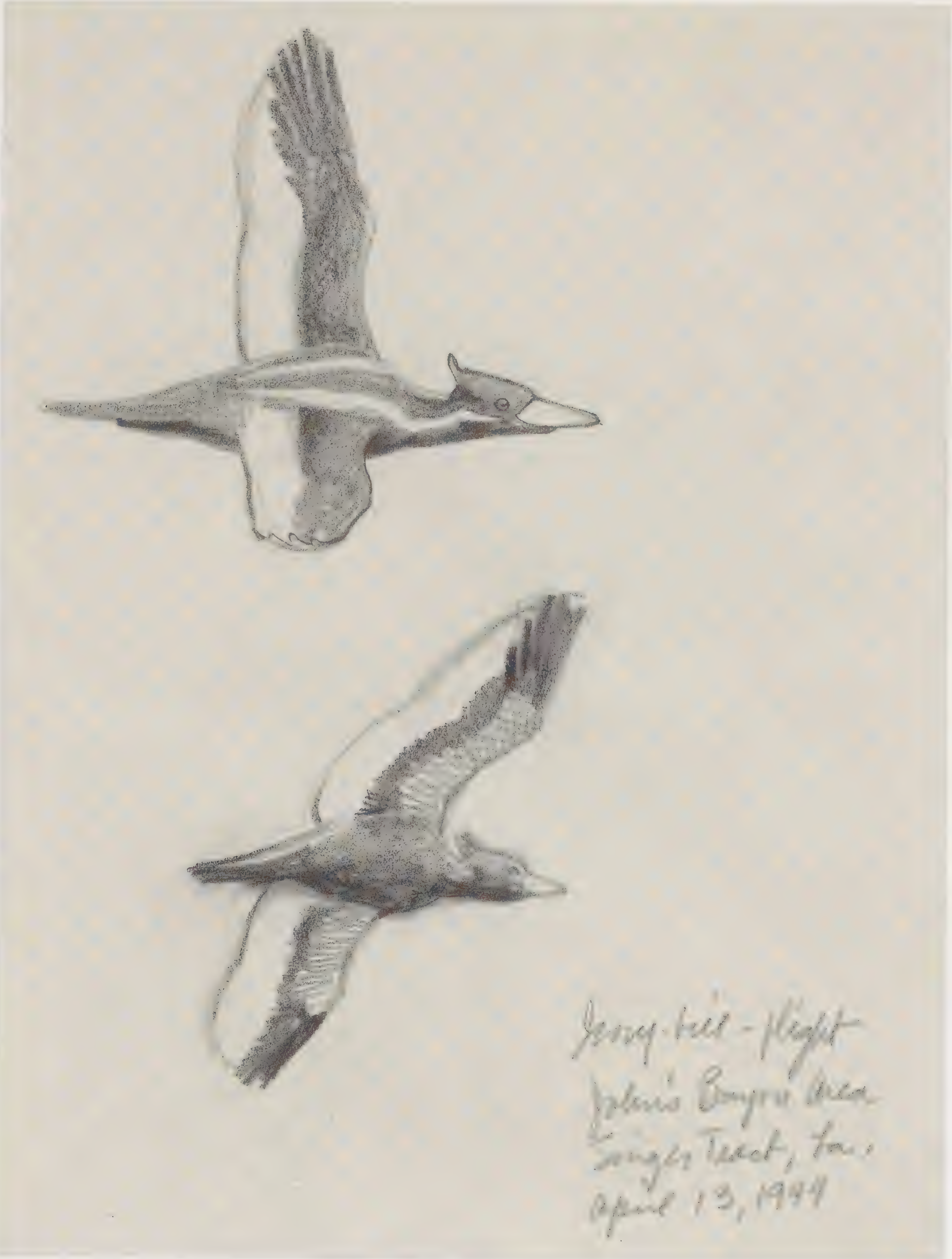
Don had good reason to be uncertain about the bird's status. A few months earlier, ornithologist Richard Pough, working for the National Audubon Society, had spent six weeks looking for ivory-bills in the Singer Tract and had found only one. It was this bird, a female, that Don hoped to see and sketch.

The war years had put pressure on forests around the United States; the Singer Tract, one of the last remaining virgin bottomland expanses in Louisiana, was being logged at an accelerated rate. This ancient mixed deciduous forest of gum, oak, and ash—the preferred habitat of ivory-bills—had become scarce and fragmented. Even the roost tree where Pough had found his ivory-bill had been felled by the time Don arrived a few months later.

Don was working for *Audubon* magazine and had convinced John Baker, executive director of the National Audubon Society, to sponsor his two-week search. With luck, the trip would yield drawings, paintings, and firsthand impressions of the bird, to be used in a magazine article and cover illustration. He hoped his work would celebrate what Lab of Ornithology founder Arthur A. Allen had called "a glorious species . . . the noblest woodpecker of them all" in his introduction to James Tanner's study of the Ivory-billed Woodpecker. Allen



Ivory-billed Woodpecker,
Singer Tract, Tallulah, La.,
April 1944



Ivory-bill - flight
John's Bayou area
Singer Tract, La.
April 13, 1944

had spoken of the species in almost patriotic terms, referring to it as "a reminder of that pioneering spirit that has made us what we are, a people rich in resourcefulness and powerful enough to accomplish what is right." To Allen the Ivory-billed Woodpecker was a "guidepost on our way of life."

On April 5, 1944, Don was expected to rendezvous with a Louisiana game warden named Jessie Laird. Having some time to wait, he hired a boat to take him up the Tensas River to search the same territory where the Cornell expedition of Arthur Allen, James Tanner, Peter Paul Kellogg, and George Miksch Sutton had found and photographed ivory-bills nearly a decade earlier. Since then, the bottomlands had been severely logged and little remained of the primeval forests. But Don's journal entries optimistically recorded what was there. They provide a picture of what remained of these primeval woods and are full of color notations for future paintings: "Flooded—coffee with cream water, chrome yellow willow catkins. Gray, rust, and hazy green woods, black, vine-draped trunks against deep green, blue sky—clumps of mistletoe stuck in upper branches like heron nests. The river narrows as we pass the mouth of Alligator Bayou. Polypody ferns grow up trunks like horses' manes. An Anhinga flies vulture-high in circles. . . . Soft-shelled turtles sun on logs. A Barred Owl flushes from its streamside home to watch us pass at a safer distance. . . Surprisingly, among the few bird songs we could hear over the noise of the outboard motor was the thin little trill of the Parula Warbler."

Later that afternoon, the Faught brothers, 13-year-old Billy and his 7-year-old brother Gene, were fishing from a bridge near John's Bayou outside Tallulah, Louisiana, when Jessie Laird pulled up in his old pickup. Laird introduced Don as an artist who had come to Louisiana to see and paint the rare Ivory-billed Woodpecker. He asked the boys if they'd like to come along and see a very rare bird that might not ever be seen again. Billy recalled that they jumped at the opportunity, thinking, "this might be the chance to see the last of its kind in the world."

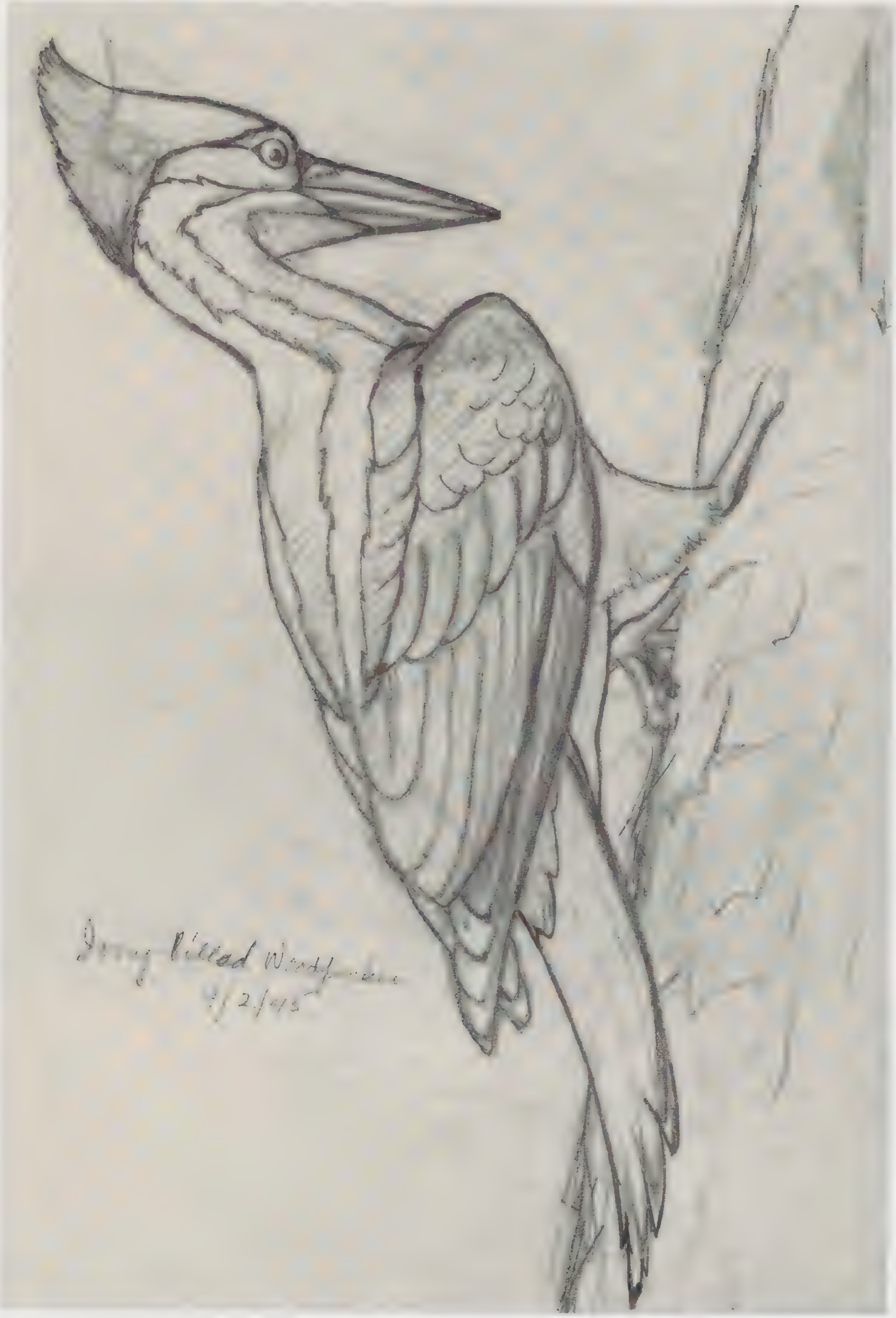
Off they all went, wading a mile or so through mud and knee-deep murky water to where Laird had found a roost tree that he hoped the ivory-bill might now be using. Billy remembers Don setting a strong pace despite his pronounced limp and the burden of sketchpads and a notebook. With the boldness of boyhood, Billy asked him how he had been injured. Not missing an opportunity to put a more romantic spin on his injury, Don said he'd broken his leg falling out of a cherry tree watching birds.

Once at the site, Laird and the boys got as comfortable as they could to await the returning bird, while Don moved about sketching vegetation and the towering 80-foot ash where an ivory-bill had chiseled out an oblong entry to a cavity 20 feet from the top. A portion of the excavation looked fresh. If the bird were to return to roost, it would be at dusk. They had several hours to wait, as hordes of mosquitoes began to rise.

With evening approaching, the bayou began to stir and the group had a sense of collective anticipation. At 6:25 P.M. Eckelberry noted in his journal the sounds that were building about him: "Tufted Titmouse calling persistently. Red-bellies *whirrup* . . . Prothonotary Warblers *seiba, seiba-seiba-seiba.*" Billy still remembers the excitement of feeling that something was about to happen, as the swamp came to life around them. He saw Don look at Laird with an expression suggesting, "Well . . . where is she?" Laird silently shrugged his shoulders. Then, at 6:33, Don recorded hearing the ivory-bill for the first time: *Kent, kent* five times from a distance. It was a tantalizing moment. There then followed three double knocks at two-second intervals, but still no bird could be seen.

At 6:47 the mythic and elusive ivory-bill arrived at the roost tree. "Flies at last into sight and directly to the roost hole in dead ash, to left of hole—hitches down, looks in, hitches down again—gives a double knock directly below hole, swings around and hitches up trunk about ten feet."

For another 20 minutes, they waited, hearing another pair of distant double knocks, amid the confused "tattooing" of other woodpeckers and Barred Owls engaged in "a round of hooting." At 6:47 the mythic and elusive ivory-bill arrived at the roost tree. "Flies at last into sight and directly to the roost hole in dead ash, to left of hole—hitches down, looks in, hitches down again—gives a double knock directly below hole, swings around and hitches up trunk about ten feet." Don assumed that this was the same female that Dick Pough had seen and described her flight in as "duck-like, secondaries stationary, primaries flapping."



A year after he returned from Louisiana, Eckelberry completed this preliminary sketch of an ivory-bill in preparation for creating the painting on page 10.

When I spoke with him a few years ago about his time with the Ivory-billed Woodpecker, Don's impressions remained vivid. He said the enormity of its bill was unexpected. Viewed from below, the bird's stark, ivory-colored mandibles, combined with the white nasal bristles and lores, made it look like a vanilla ice cream cone had been stuffed into the woodpecker's mouth. The bird seemed excessively nervous, almost hyperactive as she hitched up and down the tree frantically looking this way and that, with luminous light lemon-yellow eyes. The jerky, maniacal movements that accompanied her trumpeting left Eckelberry with the impression that a better scientific name for the bird would be *Campephilus hystericalis*.

The ivory-bill didn't stay long at the cavity. After a few moments, she flew from the top of the roost tree into the swamp. There she resumed calling and knocking briefly before returning. At 7:16 P.M. Eckelberry noted: "Alights, hitches down, looks in, hitches down, knocks, enters." It was nearly dark and the observers believed the bird had bedded down for the night, so they began to move back through the trees toward the road. They were wrong. She emerged from the cavity after less than 10 minutes inside. Perhaps their activity had disturbed her, because she went again to the treetop and flew off. It was 7:25. In five minutes, she returned, and with a single *kent* call, entered the roost to remain for the night. As far as anyone knows, this was the last time anyone ever witnessed an Ivory-billed Woodpecker returning to its roost.

Although Eckelberry remained in the vicinity of this lone bird for at least another week, his journal entries suggest that he was able to view her well only one more time. Unknowingly, his last written description is tinged with irony: "About 5:30 P.M. —*Kent!* Double rap while walking through small uncut area about one-third mile from road, found her immediately!"

One is struck by the casualness of the statement and the habitat destruction it describes. There is no suggestion that this might be the last time anyone would see a living Ivory-billed Woodpecker and artistically describe it. Arthur Allen referred to this species as "a product of the great force of evolution acting on American birdlife in ages past, to produce in our southeastern United States the noblest woodpecker of them all—one that inspired Mark Catesby and John James Audubon and Alexander Wilson—one that has lured scores of recent ornithologists to the cypress jungles of South Carolina, Florida, and Louisiana in the ardent hope of but seeing one individual alive." In those few hours he spent with this mythic bird, Eckelberry became the last of our great American naturalists and bird painters who would feel and see the profound beauty of this species and portray it from life. ■

Tony Angell is an award-winning author, artist, and educator living in Seattle, Washington. An elected Fellow of the National Sculpture Society, he is perhaps best known for his large stone carvings and pen-and-ink drawings of birds and mammals.

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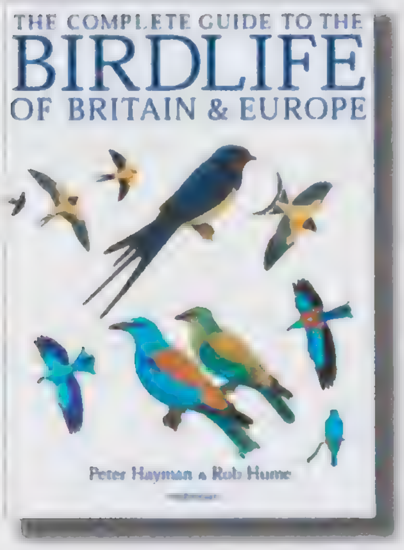

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The Beloved Country

A journey through post-apartheid South Africa

BY TIM GALLAGHER

There is a lovely road that runs from Ixopo into the hills. These hills are grass-covered and rolling, and they are lovely beyond any singing of it. The road climbs seven miles into them, to Carisbrooke; and from there, if there is no mist, you look down on one of the fairest valleys of Africa. About you there is grass and bracken and you may hear the forlorn crying of the titihoya, one of the birds of the veld.

Thus begins Alan Paton's classic 1948 novel, *Cry, the Beloved Country*, set in the days shortly before the formal system of racial separation known as apartheid was instituted in South Africa. And it *is* a truly beautiful place, with numerous areas still as picturesque as the one he described above and an incredible array of wildlife. Although I never got to hear the cry of the "titihoya" (Black-winged Lapwing)—the species evaded me during my two-week journey through South Africa—my friends and I did log 321 species of birds, the vast majority of which were lifers for us.

The others on the tour included *Living Bird* contributing editor Mel White, who writes our "Flying Field" column; Bill Thompson III, editor of *Bird Watcher's Digest*; John Cancalosi, a renowned nature

South Africa is a vast country with a small population—fewer than 45 million people live in an area larger than Texas, Oklahoma, and New Mexico combined. It also has a huge number of interesting birds, such as the Malachite Sunbird (above).

photographer; and Peter Lawson, our indefatigable tour leader.

This was in many ways a dream journey for me. I'd never been anywhere on the African continent, and I was particularly interested in South Africa—a nation viewed as a pariah for as long as I can remember because of its segregation policy. But apartheid officially ended more than a decade ago and since that time many great things have happened. After spending 28 years in prison for his views, Nelson Mandela (a leader in the banned African National Congress party) was elected by an overwhelming margin to be president of South Africa. (He has since retired, and the country is now led by T. M. Mbeki, another black African.) Just last year, I saw Desmond Tutu give a talk at Hamilton College in Upstate New York. The former Archbishop of Cape Town and famed anti-apartheid activist who led the Truth and Reconciliation Committee, Tutu spoke in glowing terms of the great experiment his nation was going through. In its racial policies, South Africa had been one of the most oppressive nations in the world, he said, and yet it had turned itself around. If such an incredible thing could be accomplished there, anything was possible. He was genuinely hopeful that South Africa would set an example for the rest of the world.

Now that many of the country's internal problems are being addressed and various boycotts are no longer in effect, South Africa is working hard to attract international visitors. The big question is whether the country is ready to take its place as a major tourist destination. South Africa certainly has the scenic splendor and wildlife. During the trip we saw most of Africa's major large mammals—elephants, hippopotami, rhinoceroses, giraffes, Cape buffalo, eland—plus a staggering array of birds: Cape Griffons, Ostriches, Hamerkops, sugarbirds, eagles, and the remarkable Jackass Penguins, which nest in a well-populated beach area on the Cape Peninsula. But does South Africa have the infrastructure to handle large numbers of tourists and, more important, is it safe? Much has been said in recent years about the level of crime in South Africa. Is it too dangerous to travel there? These were some of the questions I hoped to answer while I was there.

The first thing you learn on a trip from North America to South Africa is how far away it is. The flight from New York's JFK Airport to Johannesburg, South Africa, took 17 hours, with just one short stop at the Cape Verde Islands. Africa seemed worlds away. We had left New York in late January—the coldest, bleakest part of winter—and found ourselves at the height of summer in South Africa (because it is in the Southern Hemisphere, its seasons are the reverse of ours). And then at night, the constellations were completely different—no Big Dipper or Little Dipper, no North Star; the Southern Cross was the major constellation. But, of course, what struck all of us immediately was the change in birdlife. Before we even left the plane, we spotted the Blacksmith Plover (which turned out to be ubiquitous in the countryside), Long-tailed Widowbird, and Reed Cormorant through the tiny windows.

The Cape Sugarbird (above) is a South African endemic, found only in the southernmost area of the country. It's a common resident, often spotted foraging in stands of flowering proteas on mountain slopes.

JOHN CANCALOSI

TIM GALLAGHER

A group of impalas (above) forages beside a forest glade in Ndumo Game Reserve. These slender, medium-sized antelope are found most often in edge habitat, where woodlands meet grasslands.

We didn't have far to go to our hotel—just five minutes away from the airport in Johannesburg (or "Jo'burg" as the locals call it). It was in a gated compound, with guards patrolling the grounds. Everything was self-contained—exercise areas, tennis and squash courts, pool, and a dining area, surrounded by a parklike garden.

The hotel was not a bad place to start birding. Up before breakfast, Mel, Bill, John, and I scattered over the hotel grounds, searching for new birds. We saw numerous Hadada Ibises (their onomatopoeic *ha-ha-ha-de-da* call ringing out around us), Glossy Ibises, Sacred Ibises, White-faced Whistling-Ducks, as well as the stunning, bright yellow African shrike called the Bokmakierie. But we couldn't wait to get out of Jo'burg and start exploring the "real" Africa. After breakfast, we loaded up our VW van and hit the road, in search of birding adventures.

Our guide, Peter Lawson, of Lawson's Birdwatching Tours, was great. He'd spent his entire life in the African bush, and it showed. He had an instant answer for every question we asked, whether about birds, mammals, plants, or people. Our curiosity was boundless and our questions often outrageous: "Ever been charged by a rhino? Ever had a close call with

TIM GALLAGHER (2)

Some of the grasslands in South Africa look similar to the Great Plains of North America—except for the wildlife and the kinds of human habitations you encounter. At right, a small Zulu village, with its distinctly patterned mud huts. Above, a Zulu woman carries a heavy container of water on her head.

a lion?" Peter would invariably pause, stare off into space for a minute, and say: "Yeh-uss," in his distinctive, two-syllable way. Then he'd go off on a long riff about the rhino that burst out of the brush and tried to slam into his Land Rover or the lioness he came face-to-face with while strolling through the bush, armed only with his 10x40 binoculars.

One day Peter told us about the time he was crossing a river in a small boat when a hippo suddenly burst from the water in front of him, opened its huge mouth, and bellowed. "That's amazing," I told him. "I had practically the same thing happen on the Jungle Cruise last time I went to Disneyland." He paused, glared silently at me for a moment, then said "Yeh-uss" and continued his story.

Bill and Mel had really done their homework, studying their African field guides thoroughly before the trip. (Mel was already a veteran of a couple of other African trips and had a good head start.) The two of them were ticking off birds right and left, barely peeking at their already well-thumbed field guides. Being a lifelong raptor freak, I was delighted to spot the first bird of prey—a Black-shouldered Kite hovering not far from the highway. But Bill soon spied something far better: a pair of African Fish-Eagles, with brilliant white heads and chests and chestnut bellies, perched regally beside a small wetland. Later, we saw Jackal Buzzards, a Wahlberg's Eagle, and an enormous Cape Griffon, which loomed overhead, maybe 300 feet above us, as impressive as any condor.

Then some quintessential African mammals started popping up on the hillsides. (We should have known we were in a good area when we saw the tall fences appearing along the roadside, installed to keep wildlife off the highway.) We saw Burchell's zebras, red hartebeasts, blesboks, and springboks. At one stop, we watched a yellow mongoose hunting among some rocks.

The roadside birds were spectacular. At first, we couldn't get enough of the flashy Red Bishop and its twin (but differently colored) brother, the Yellow-crowned Bishop, their spectacular plumages aglow in the warm afternoon light. Another stunner was the Long-tailed Widowbird—a black bird with red shoulder patches and absurdly long tail plumes that flow down like a strange fright wig as it flies. But all three proved to be as common as dirt in many of the areas we visited.

It struck me as we traveled through South Africa how familiar some of the places looked. Driving through some vast, rolling grasslands, I remember thinking several times that if someone blindfolded me, beamed me over here, and asked me where we were, I might guess eastern Montana or some other North American locale. But then, going over the next rise, I would inevitably be brought up short by the sight of a Zulu village, with its distinctively patterned mud huts, or a herd of wild zebras, and I'd no longer have any doubt where I was traveling.

Another thing I found different about South Africa is the low cost of living—at least for American visitors. The exchange rate is incredibly favorable, making this country one of the best deals going in terms of international travel. As I'm writing this, one U.S. dollar is worth 10.11 South African rands. At that rate, you can get an excellent multicourse dinner, served with a fine domestic wine, for the price of a McDonald's Super-sized Value Meal back home, and you can stay in a luxury hotel for about the cost of a Motel 6 room.

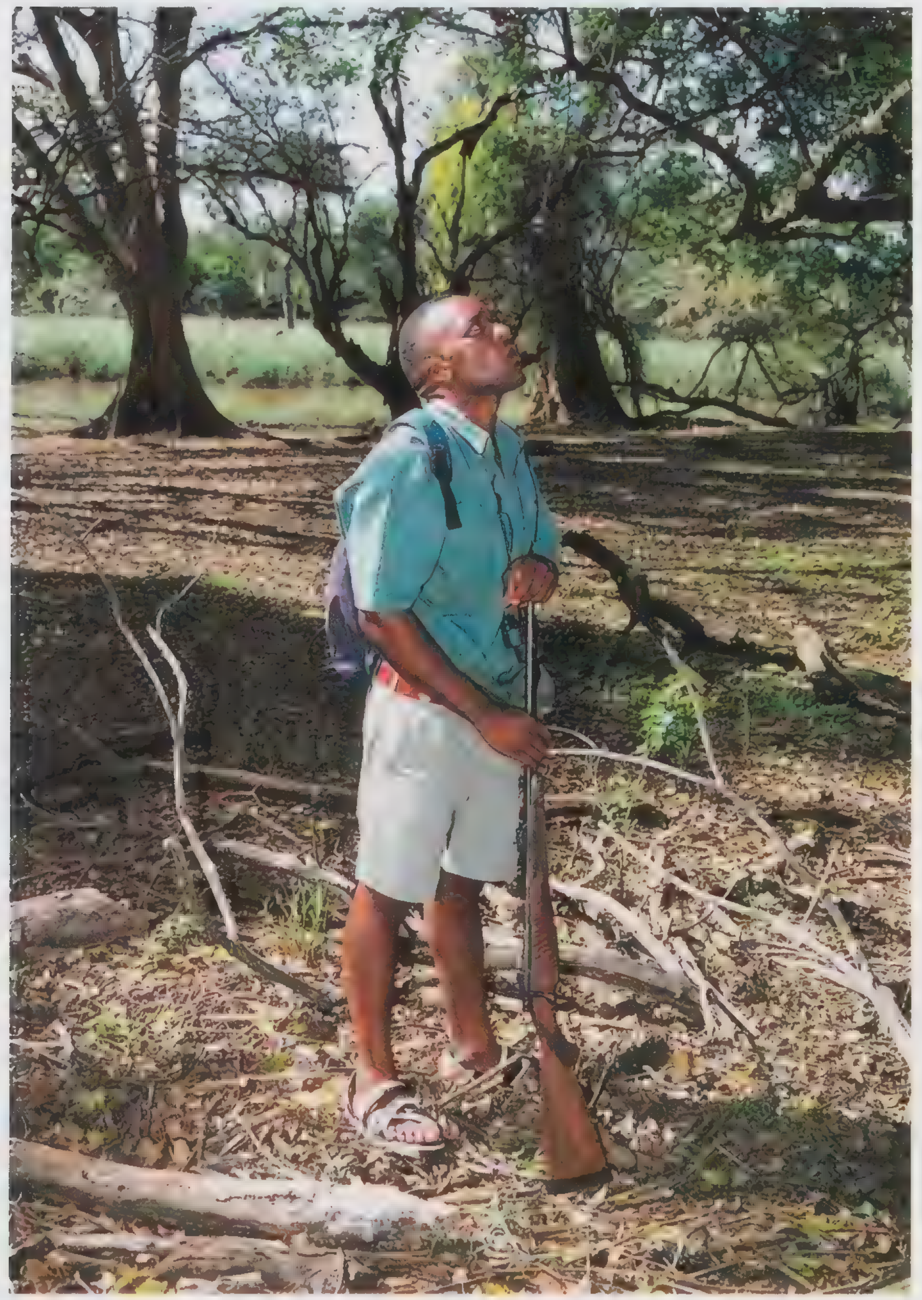
We spent a couple of nights at Ndumo Game Reserve in Kwazulu-Natal province, about 60 miles north of Mkuze, near the Mozambique border. Some have called Ndumo a miniature Okavango Delta, which might be an exaggeration, but it does boast a spectacular array of wildlife, with more than 400 species of birds, as well as rhinoceroses, hippopotami, crocodiles, warthogs, various antelopes, and more.

We stayed at the Ndumo Wilderness Lodge, which consists of a series of raised walkways and safari tents on wooden platforms, maybe 15 feet above the ground, at the edge of Banzi Pan, a natural, reed-lined lake surrounded by forest. During the day, we saw warthogs, antelopes, and other animals walking constantly beneath the boardwalks and platforms. But it was at night that the place came alive as hippos rumbled through, moaning and bellowing. Each morning, the mud under the decks was full of their tracks.

The atmosphere at the lodge was wonderful. In the evenings, as we sat beside an open fire, we could hear the drums of a Zulu village,

just a couple of miles away in Mozambique. But the birds . . . every trip down the boardwalk brought us new first sightings. I remember standing on the deck at Ndumo Lodge one morning watching a rare Sooty Falcon tear around the wetland for more than 10 minutes, alternately soaring high above the area and then diving like a tiny ballistic missile. Other "deck" birds included a Fasciated Snake-Eagle, which often perched on the trees at the far edge of the water. The reserve had a great selection of other interesting raptors. One day at lunchtime, we stopped at a Crowned Hawk-Eagle nest and watched a well-developed eaglet sitting up in its lofty stick nest. While cruising around in a Land Rover, we spied Lesser Spotted Eagles, Wahlberg's Eagles, as well as numerous Eurasian Buzzards.

We spent several hours in a blind beside a river, watching hippos bathe and African Fish-Eagles perch in the trees. At one point a large raptor came swooping through. "Black Sparrowhawk!" we cried out. I have no idea how this raptor got its name. Not only does it dwarf a European Sparrowhawk, it is actually larger than a goshawk. Scanning the trees on the other side of the water a few minutes later, I spotted another raptor, smaller and with a gray-barred breast—an African Cuckoo-Hawk.



Later, in the early evening, we watched a massive, scar-faced crocodile, nicknamed "Beauty," as it relaxed on a small spit of land jutting into a river. According to Peter, Beauty has killed and eaten two humans during the course of its career. But crocodile attacks are not unusual in this area. The Zulus often wash their clothes or bathe at the edge of rivers or wetlands, where crocodiles sometimes lurk. These ancient reptiles can lie as motionless as a log for hours, only to burst out and attack with lightning swiftness if they detect a living thing in the water near them.

Our guide, a young Zulu called Johnson Mlambo, told us about a crocodile attack that happened when he was a boy. Although his mother had forbidden him to go near the water, it was a hot day, and he and his friends decided to go for a swim in a river channel. They splashed around in the water for an hour or so without ever noticing the crocodile lurking in the reeds. They had only been out of the water a few minutes when a woman came there to wash her clothes and was attacked by a crocodile. She lost an arm.

TIM GALLAGHER (3)

Mel White (above left) examines a harmless snake found along a trail at Ndumo Reserve. At left, Johnson Mlambo, a Zulu guide, whistles at a bird in the canopy. At Hluhlwe Park (above), a group of elephants bathes in a river at dusk.

But Johnson was always right beside us at Ndumo, armed with a rifle, to make sure nothing bad befell our group. This is standard procedure in most of South Africa's parks and reserves, where you could stumble upon a Cape buffalo, lion, hippo, or other large, potentially aggressive animal. Johnson has spent his entire life in this area and has an intimate knowledge of the plants and animals found there. He knew the birds well and could imitate the songs and calls of many. As a boy, he had often hunted them for food, but now he is able to put his field skills to good use pointing out the area's unique birds to visitors from far away.

On our second day at Ndumo, we met a bush pilot who offered to take us on a long flight down the coast. The opportunity was too good to pass up, so that afternoon Bill and I drove with him to the "landing strip," a mowed area cut into the grassland. Before the plane could take off, we had to chase a herd of goats out of the way. Although the tiny plane had oversize balloon tires to handle the bumpy ground, it was still a rough ride as we made the long run down the strip, trying to build airspeed. Finally, we were airborne. Turning east we gained altitude and flew along the Mozambique border, headed toward the coast. We were only about 1,000 feet up, so we had a great view of the terrain. Numerous hippos bathed below us, and huge crocodiles lay clus-

One of the most surprising sights on the trip was the colony of Jackass Penguins at Boulder's Beach on the Cape Peninsula. These birds nest in the shrubbery, often alongside houses, and swim in picturesque coves like this, sometimes side-by-side with humans.

tered like great logs in the current. Occasionally we came across grass-topped huts as we flew over villages, with small children playing in the dirt outside. We also saw billows of smoke rising, where people were engaged in slash-and-burn farming—a ruinous agricultural technique common in developing nations.

The next day we explored Hluhlwe (pronounced, believe it or not, "shloo-shloo-way") Game Reserve in the heart of the old Zulu Kingdom. Founded in 1897, it is one of the oldest reserves in the country. Hluhlwe is now connected to Umfozoli Game Preserve with a five-mile-wide corridor and they are administered as a single massive park, comprising nearly 250,000 acres. All of the so-called "Big Five" African mammals—elephant, lion, leopard, rhinoceros, and buffalo—live there in the rugged hills. We managed to see three of them in the few hours we spent driving a Land Rover on the park's system of dirt roads, but, alas, the African lion and the leopard managed to steer clear of us.

I only wish we could have spent more time in this wonderful place. There I saw my first wild African elephants. At first, we saw only a couple of them foraging here and there on distant hillsides, but toward evening, we ran across a herd of perhaps 30 cooling off in a river. Earlier, we had some close encounters with rhinoceroses (including both black and white rhinos), zebras, monkeys, baboons, and birds, such as the Variable Indigo bird, Red-billed Quelea, Black Crake, Natal Francolin, and White-backed Vulture. I had hoped to find a Bateleur—a distinctive short-tailed eagle with black, white, and chestnut plumage—but we struck out.

HEALTH AND SAFETY CONCERNS

Malaria is the illness most people think of when planning a trip to Africa, but actually only a tiny portion of South Africa—mostly in the Northern Province, Mpumalanga, and Kwazulu-Natal—is considered a malaria risk area. Several antimalarial drugs are available to prevent infection. Ask your doctor which one would be best for you. It's a good idea to visit the Centers for Disease Control and Prevention web site at <www.cdc.gov>, click on Travelers' Health, and then on Southern Africa. You'll find complete information about outbreaks of illness in particular areas and any preventative steps you need to take.

Security problems exist in most South African cities (especially in Johannesburg's city center), so you should be vigilant and take precautions to avoid becoming a crime victim. Try to avoid looking too wealthy, wearing lots of jewelry and expensive camera equipment while strolling along the city streets. Avoid deserted urban areas even in daylight, and don't go walking after dark. Don't carry large amounts of cash: use travelers' checks and credit cards instead. If you are confronted by a robber, it's best not to resist. In general, you are safe when there are a lot of people around or if you're in a group.

It would be easy to write reams of enthusiastic prose about all the places and wildlife we saw. I could tell you about the day we spent in the Karoo Desert with ornithologist Callan Cohen (author of *Essential Birding—Western South Africa*), looking at Pale Chanting-Goshawks, Karoo Prinias, and the spectacular Pied Barbet. I could mention the afternoon we strolled through Boulders Beach, where penguins swim in rocky coves alongside people and nest in shrubbery beside houses. Or I could tell you about the beautiful wine country of the Cape, where we saw great birds and stunning scenery and also sampled some excellent local wines. There just isn't enough space.

JOHN CANCALOSI

With its black cap and distinctive white "halo," the Crowned Lapwing (right) is virtually unmistakable. The birds are found all over South Africa, in short grass, fallow land, and playing fields.

South Africa is obviously well worth visiting. But to get back to the question I asked at the beginning of this article: Is it safe? (See sidebar.) The answer is yes . . . and no. It all depends on where you go. The city of Johannesburg is justifiably famous for its level of crime. Any travel guide will tell you that. And it isn't just petty crime. The city center and inner suburbs are particularly dangerous, with many daylight robberies and car thefts. The city's northern suburbs and the satellite malls and business parks that service them are said to be clean and safe, but I was glad to be staying in a gated hotel with guards. Frankly, I had no wish to explore Johannesburg anyway—I couldn't wait to get into the bush and start experiencing Africa. I never felt concerned about being robbed anywhere else in the country.

As for the country's basic infrastructure, it is excellent. One person I met told me that South Africa is a Third World country with a First World infrastructure, and perhaps that's a good description. The highways are great. You can go almost anywhere and find rest stops with hamburgers, fries, and gas, just like in America. But there is also great poverty, both in cities and in rural areas.

The sad thing about South Africa is that it

BHL

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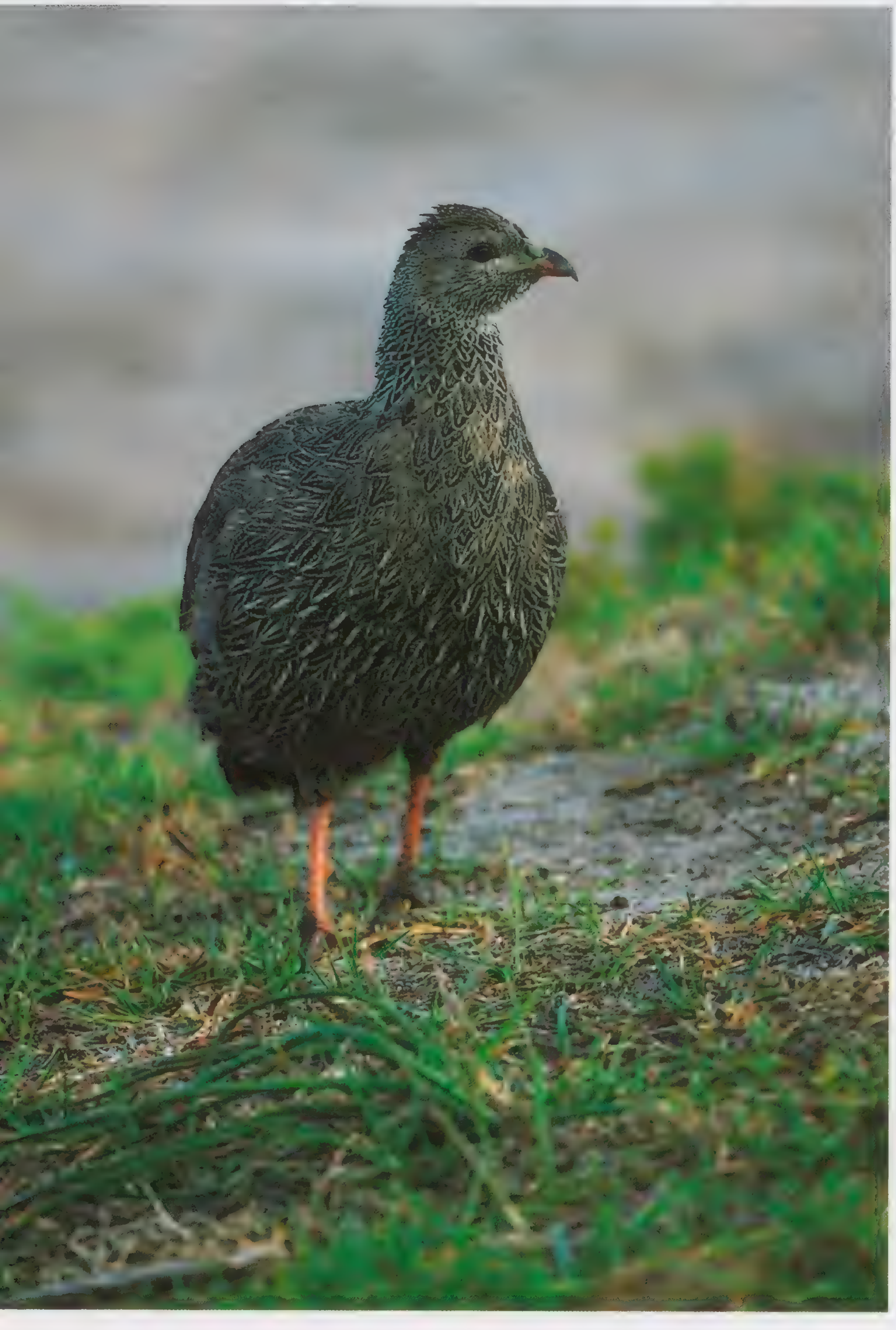
wasted so much time before attempting to deal with its deep national problems. In *Cry, the Beloved Country*, Alan Paton tried to present a vision of understanding, equality, and fairness. Ironically, his book was published in 1948, the very year that the Afrikaner National Party was elected on an apartheid platform. Things went down quickly after that as the country was divided into white areas and native lands (which made up only 10 percent of the country). Many blacks were moved from their ancestral lands into areas that were dry and fragile, unsuitable for supporting large numbers of people, so there were deep human as well as environmental consequences. South Africa was shunned by many nations. It was basically driven from the British Commonwealth and the United Nations and banned for many years from the Olympic Games. But the country is now working tirelessly to overcome its inequities and polish its tarnished image. I hope Desmond Tutu's assessment of his country is correct. I certainly wish the people of South Africa well. ■

The Cape Francolin (below) is a ptarmigan-sized endemic gamebird found along the southern and western coasts of South Africa. The species is common in "fynbos" habitat and is also regularly seen in pastures and croplands.



JOHN CANCALOSI

FURTHER INFORMATION

The following books, offices, and web sites are useful for finding out more about traveling or birding in South Africa.

Shales, Melissa. *Fodor's Exploring South Africa.* New York: Fodor's Travel Publications; 2002.

Murray, Jon, and Jeff Williams. *South Africa, Lesotho & Swaziland.* Melbourne: Lonely Planet Publications; 2002.

Sinclair, Ian, Phil Hockey, and Warwick Tarboten. *Sasol Birds of Southern Africa.* Cape Town: Struik Publishers; 1997.

Newman, Kenneth. *Newman's Birds of Southern Africa.* Cape Town: Southern Book Publishing; 2000.

Cohen, Callan, and Claire Spottiswood *Essential Birding—Western South Africa.* Cape Town: Struik Publishers; 2000. This entire book can be viewed online at <www.capebirdingroute.org>.

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A MARSHLAND RAMBLE

TEXT AND PHOTOGRAPHS
BY WILLIAM BURT

What would a wild place be without uncertainty?

After zigzagging through the little town of Douglas, Manitoba, Route 340 shoots straight south across a marshy basin, which sprawls soft and green for a very long way on either side. To the west, this sea of sedge extends about two miles, then gradually gives way to smooth, solid plains dotted with grazing cattle. To the east, it extends still farther, and not to any such pastoral destination but to areas ever more wild, ever more vague and inaccessible: for five miles there is nothing but waving sedges, huddled willow shrubs, and the odd slow stream or pool. Then the meadow merges with the deeper, darker green of tamarack and sphagnum. A mile-long lake appears, Sewell Lake, clear blue and pristine, ringed by meadow traced with the trails of moose and elk; then other lakes appear, with their thin bands of marsh, blue holes in the blanket of green tamarack. The wetland is all wooded now, except for the small swathe of meadow etched out here and there, and the shining squiggle of Epinette Creek, and, as the basin turns south, the east-west

On an eerie night in a marsh near Douglas, Manitoba, lightning blazes in the darkening sky as fireflies twinkle in a sea of sedge.

stitching of the Canadian Pacific Railway. Here is the sort of wilderness a person dreams about, unsullied by the centuries.

Yet it is a pleasant wilderness. In June, some years ago, I spent many hours in the sedge meadow near town, searching for a certain bird, and I can tell you that this marsh is about as Elysian as a place can be: cool, dry, zesty by day, and relatively free of insects; and by night, still and solemn, enchantingly alive. And it is mostly shallow and easy going, spongy and shaky sometimes but solid enough, generally a pleasure to wade through.

But it is under cover of dusk, or dark, that the marsh really comes into its own. There's no nicer stroll I can think of, anywhere, than a stroll along that little road on a calm June evening, when the air is savory and cool, the meadow vaporous, mysterious, and the great volume of sky enthralling, mesmerizing like a deep pool. With darkness come the lights of fireflies, the stars, and the momentary lines of meteors. One night when I was out late, maybe 2:00 A.M., a fireball meteor plowed through the sky, burning big and brilliant as magnesium and then waning to a metallic green, then purple, then fading altogether except for a still-glowing vapor trail. The glow died out, top to bottom, then suddenly lit up again along its entire length, then died out for good. But it left a solid streak of cloud, a lasting and irrefutable scar.

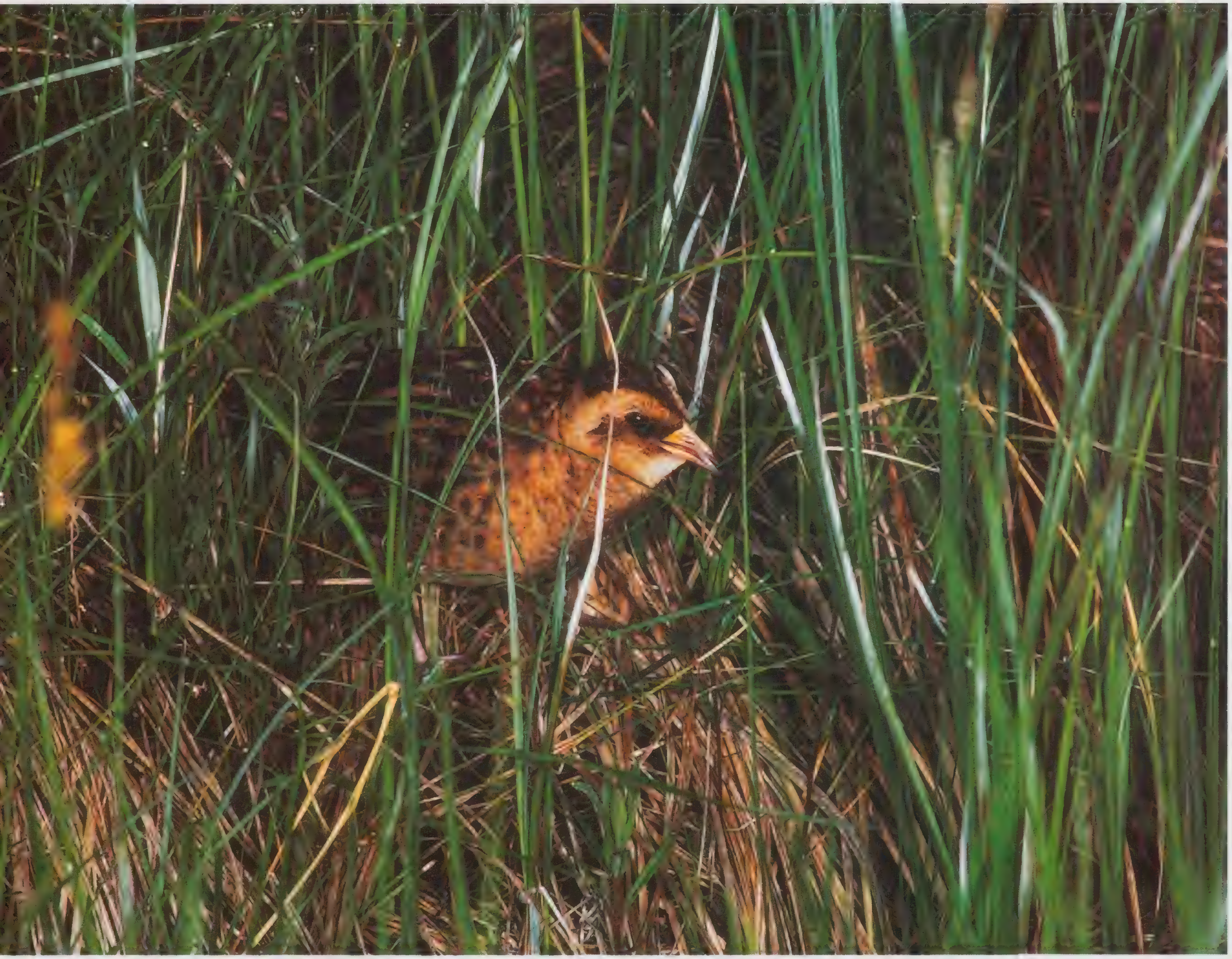
Some nights you see other, artificial meteors and fireball flares, a few miles to the south, over the Shilo Armed Forces Base.

But it's what you cannot see that really twiddles your imagination. It's the sounds, the voices, the bitterns thunder-pumping and the snipe jungle-hooting in the dark above, and the Soras, peeping and whinnying all across the meadow, especially in the wetter, deeper parts. From an open pool by the road you might hear a splash . . . not a falling cannonball, as it might seem, but an alarmed beaver. You might hear the wheezy ringing of a Nelson's Sharp-tailed Sparrow, barely audible, or the buzzings of LeConte's Sparrows. LeConte's in particular sing at night, persistently, usually from small shrubs at the marsh edge.

Most persistent of all are the singing Sedge Wrens—pert, puckish little jobs, barely bigger than kinglets, they pound out their flinty notes repeatedly, with the most determined and unflagging energy. Just how these tidbit birds keep going as they do, all day and all night

LeConte's Sparrows (left) sing persistently at night, usually from small shrubs at the edge of the marsh. Above, dusk settles over Douglas Marsh.

It is under cover of dusk, or dark, that the marsh really comes into its own. There's no nicer stroll I can think of, anywhere, than a stroll along that little road on a calm June evening, when the air is savory and cool, the meadow vaporous, mysterious, and the great volume of sky enthralling, mesmerizing like a deep pool.



The call notes of the Yellow Rail are unlike those of any other rail, or any other bird, or any other living thing. They are nothing more than clicks, mechanical, typewriter clicks in groups of twos and threes, inanimate as any sound you'll ever hear.

The Yellow Rail (above) is tiny—about the size of a bluebird with its tail cut short. Birders come to Douglas Marsh from far and wide to try and get a peek at this secretive phantom.

long, for 10 minutes at a time, or longer, I do not know. And they pound out these notes late into the summer, well into August and even September, when other meadow birds have fallen silent, and the trilling crickets are their only accompaniment. That is some stamina, some tried and true machine; they cannot get enough of singing, it would seem.

Sedge Wren: the bird is aptly named, and aptly present here at Douglas Marsh. Except for some watery or boggy open spots and willow shrubs, the landscape comprises nothing but the shiny, sharp-edged blades of sedges, which grow waist-high, and swish and squeak as you walk through. Actually, this great sedge meadow is what you would properly call a *fen*—that is, a "calcareous" wetland, because it lies upon a limy substrate. A botanist would tell you that its plants reflect that geologic influence.

I know another, smaller fen just like it, down at Esmond, North Dakota. Farmer Leon Arnold took me out there one evening, and it was full of chipping Sedge Wrens and buzzing LeConte's Sparrows, and the telltale ticking notes of another bird I haven't mentioned yet. This North Dakota fen is a perfect scaled-down replica of Douglas Marsh: it, too, is full of sedges, wet beneath and spongy but quite walkable, and it has the same scattered willow shrubs and boggy pools, often skimmed with meager plants: the same algae, bladderworts, and quillworts. So intensely alkaline are these boggy areas, I suppose, that little else will grow.

Oh yes, the author of those telltale ticking notes? The other bird you might hear out in those Manitoba sedges late at night, the famous Douglas mystery bird, which people come from far and wide to hear and try to see, is the Yellow Rail. Like other rails, this shadowy character spends most of its life unseen, beneath a screen of vegetation. The Yellow is small as rails go, about the size of a bluebird with the tail cut short; and it is a remarkable case of cryptic coloration—a straw-colored bird that lives in straw. But more amazing still is this bird's motion: it threads, flows, pours its way through sedges like some phantom snake. You can actually watch it go, follow it with a light, and still fail to discern any motion. The bird just melts away.

The call notes, too, are unlike those of any other rail, or any other bird, or any other living thing, for that matter. They are nothing more than clicks, mechanical, typewriter clicks in groups of twos and threes, inanimate as any sound you'll ever hear. One damp night I stepped from the car to find the whole marsh clattering with those typewriter clicks, in so mad a racket that it seemed electrostatic, actually, like a gang of bug zappers on a busy night—15 or 20, 30, 40? I could not even count the birds, so many and so frenzied were the calls. But in most years, there are far fewer. If you want to walk out and try to see that strange typewriter-bird, ask Douglas resident Larry Plowman. He knows the marsh well, and he owns much of the best access to it.

Whatever the voices holding forth there, Soras, Sedge Wrens, Yellow Rails, or any other, they can confound the senses. Eye and ear deny each other. What you *see* out there is a world of icy stillness—darkness, stars, the silvered arcs of sedges—and what you *hear*, meanwhile, is all that activity, those voices.

There is one unsettling thing about Douglas Marsh, and it's most unsettling when you're out there late at night: quicksand. The subject came up more than once during my first visit—first, when a red-haired fellow at the general store told me about some cows he'd lost out there on the meadows, apparently to quicksand; and then again one evening when I was standing near the road, knee-deep in mud and water, and a stern military man stopped his Jeep and all but ordered me to get out.

"Don't you know there's *quicksand* out there?"

Quicksand. It recalls an experience years before, after I'd been slogging through a marsh in Connecticut, where I live, at a place called Dead Man's Swamp—not really a dangerous place, as the ominous name suggests . . . or so I thought. I'd floundered ashore after a strenuous adventure and was met by a man, a hunter, who wanted to talk about "the springs." "Look out for them," he warned, and with eager, animated eyes, he recounted the time he misstepped and found himself all of a sudden cold and in the dark, unable even with the tip of his rifle to find the surface. Obviously, he'd managed to bob back up again.

In any anecdote involving muddy, miasmic places like swamps and bogs and marshes, you can expect some hyperbole, and even an element of superstition. But how do you know when there might be some truth that you ought to heed? I basically believe the hunter's story about the springs, I think, though it might have been embellished just a little. About the perils of Manitoba quicksand, though, I'm much more skeptical. Cows, yes; not noted for their analytic minds or their agility, they could wander into open mire and sink, but could a being as light as a person, even if he tried? The notion that quicksand can suck you downward is certainly a silly one, useful though it is in

Whatever the voices holding forth there, Soras, Sedge Wrens, Yellow Rails, or any other, they can confound the senses. Eye and ear deny each other. What you see out there is a world of icy stillness—darkness, stars, the silvered arcs of sedges—and what you hear, meanwhile, is all that activity, those voices.

television Westerns and in literary works like *The Hound of the Baskervilles,* the Sherlock Holmes novel by Arthur Conan Doyle in which the hideous "great Grimpen Mire," that no-man's-land of "green-scummed pits and foul quagmire," evokes more evil than the villain.

Springs? Quicksand? They are ideas that prey upon you easily when you're wading through unknown regions in the dark, in a Manitoba marsh. But I believe that at any other time, in any sort of marsh, wherever rank vegetation has taken hold, it is safe to step upon it. And so far, for me, the tenet has proved safe.

To the east of Douglas Marsh, the land becomes ever more wild and inaccessible as the meadow merges with tamarack and sphagnum. "Here is the sort of wilderness a person dreams about, unsullied by the centuries." Above, another secretive marsh creeper, the Sora.

Marshes are not such vile places, really. Some can be nasty, some of the time—never really treacherous, perhaps, but surely nasty. That Dead Man's Swamp in Connecticut, for example, with its tall, lacerating blades of bulrush and floating mat that sinks beneath your feet, and those reputed springs.

But again, a marsh can be pampering and delightful: Douglas Marsh, for instance. No place is more pleasing to the senses, except maybe when you're out there wading late at night, alone, and the uncertainty of quicksand comes to mind. . . . But then, what would a marsh be, what would any wild place be, without uncertainty? ■

William Burt is a freelance photographer and author based in Old Lyme, Connecticut. His latest book is Rare and Elusive Birds of North America.

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More from *Living Bird* Winter 2002 report:

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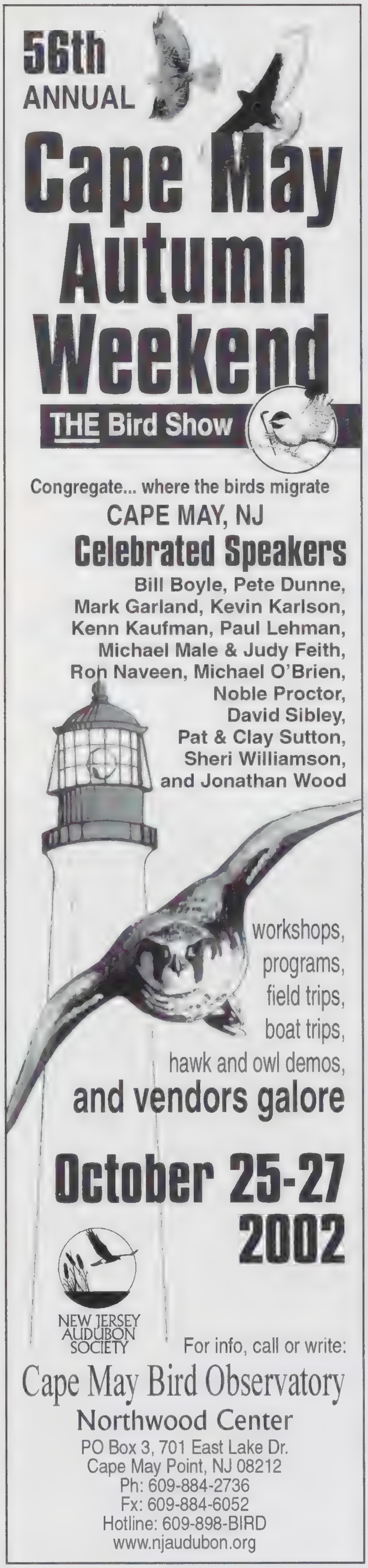

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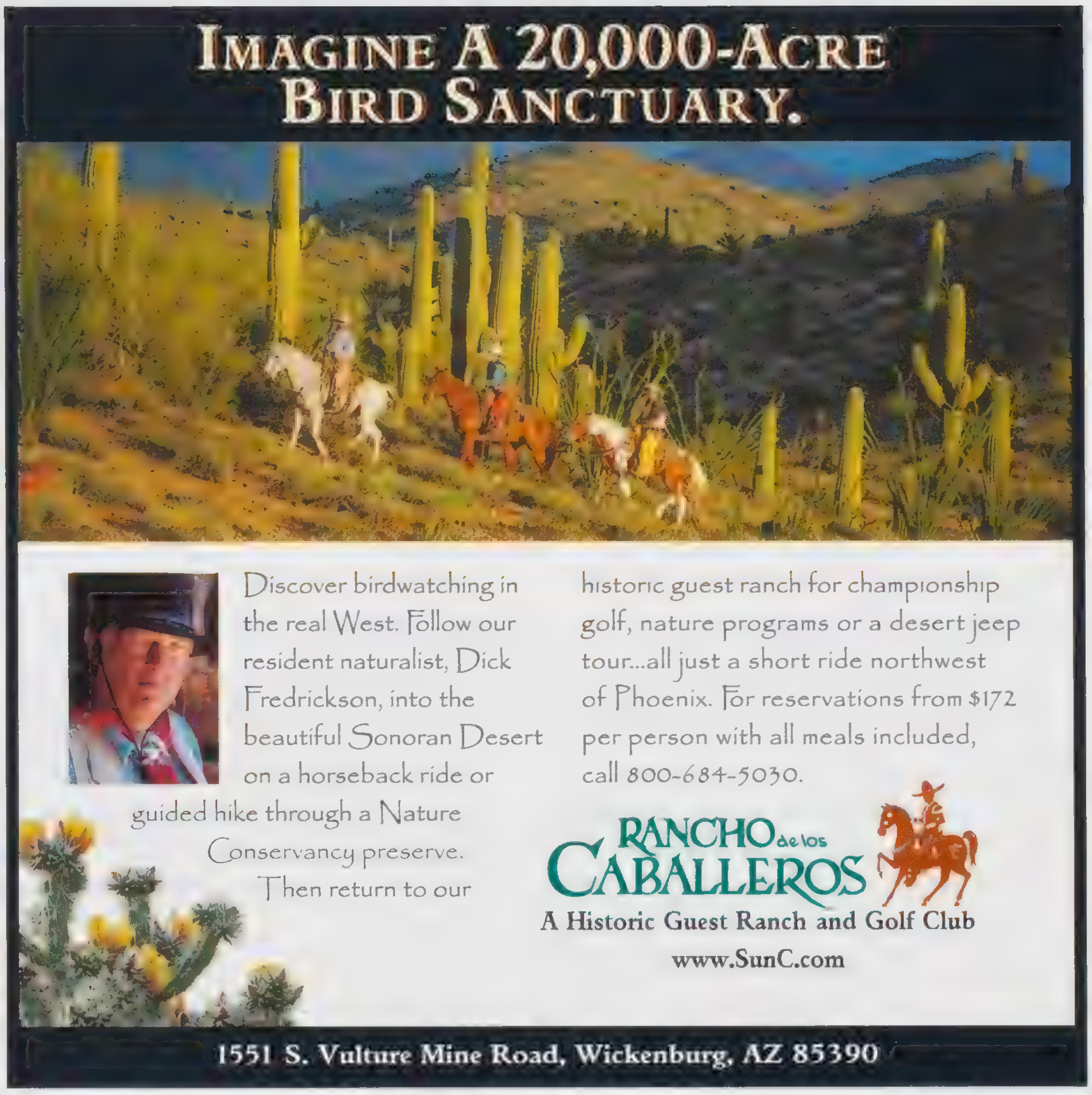

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Profile

THE BUSINESS OF BIRDING

by Allison Childs Wells

Software designer and entrepreneur Peter Thayer aims to make birding more enjoyable for everyone

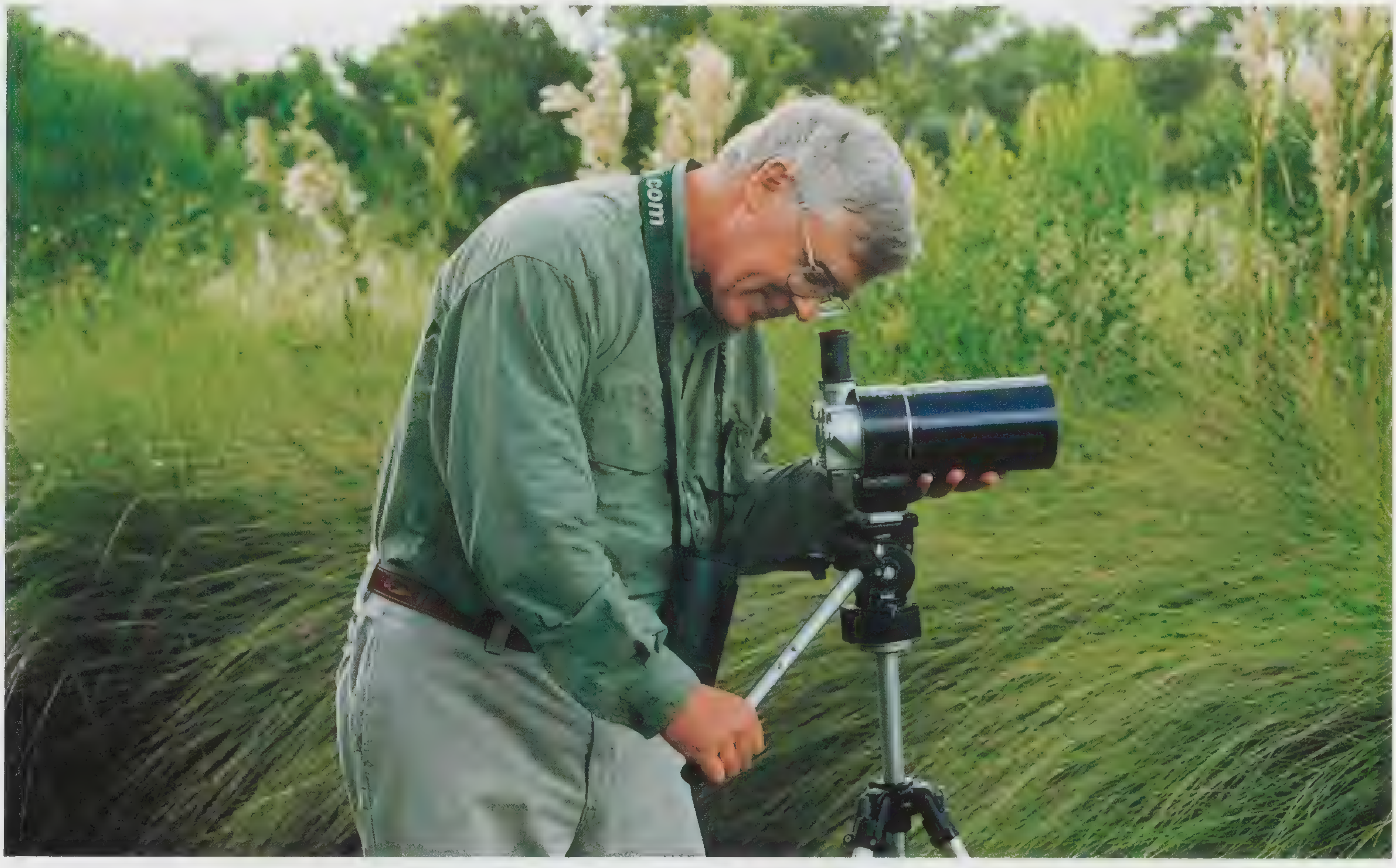
Some people leave their "day" jobs to spend time fishing on quiet ponds. Some tackle assorted projects around the house. Others pour themselves into developing top-rated birding software, creating birding web sites, and building a Web-based business to serve anyone with an interest in birds.

Actually, there's only one person ambitious (or foolhardy?) enough to do the latter. His name is Peter Thayer, the brains and brawn behind Thayer Birding Software (TBS).

Since its debut in 1994, Thayer Birding Software has become a widely respected name in the birding community. The fruit of Pete's labors help make it easy and enjoyable to keep track of your birding records and to learn more about birds, including their songs and calls. His software is highly acclaimed and has even won awards from *PC Magazine.* This success is due largely to the fact that he is completely committed to meeting the wants and needs of birders. In fact, the whole TBS business was founded based on the demands of the birder he knows best: himself.

It began in the late 1980s, when a small bird Pete didn't recognize landed in his yard near Cincinnati, Ohio, and hopped around, flicking its tail. "After identifying it as a Palm Warbler, I found myself on the road to rediscovering my childhood love of bird watching," says Pete. Soon, he had joined the Cincinnati Nature Center, was going on local bird walks, taking tours to birding hotspots like Trinidad and Tobago, and logging his observation records into bird-listing software.

But as his birding finesse improved, Pete grew increasingly frustrated with the software then available, so he took matters into his own hands. After



Pete Thayer (above) has been an avid birder since the late 1980s. He has traveled the world in search of birds, logging 2,830 species. At right, he spends some quality time with a group of Emperor Penguins in Antarctica.

teaching himself how to use a Microsoft Access database program, he created the bird-listing and record-keeping program he had been looking for. "I thought it was pretty cool," says Pete. "So cool, in fact, that I worked with a company in Cincinnati to release a commercial application of the product. They estimated it would cost $65,000. Well, $750,000 later, we were still working on it."

In addition to a fast and painful lesson in what it takes to finance groundbreaking software, he also quickly learned that what birders really wanted was a product that included pictures and sounds of birds. With none on the market, Pete decided to make one. He demonstrated the beta version of *Thayer's Birds of North America* at the American Birding Association convention in Minot, North Dakota, in June 1994. It was there that he took his first order. "I was so excited, I kissed the guy!"

The product was officially released in December 1994. It was the first CD-ROM to feature all of the birds of North America, and the response from the birding community was swift and strong. "The corporate offices were in my home. My wife and I were in Antarctica on a birding trip, planned and paid for a year in advance, so my three kids were left to answer the phone. They were absolutely swamped with calls. They still have not forgiven me for that."

That, as anyone who uses birding software knows, was merely the beginning. Indeed, after years of tweaking and testing, the end product now bears the name of the ornithological institution Pete admires most, the Cornell Lab of Ornithology. "The Lab is a truly unique place," says Pete. "The staff is doing extremely important scientific and conservation research, yet they completely understand the birder mindset. Some of the staff are considered among the best birders in the country. I'm both flattered and thrilled that we are working together."

The Lab's initial involvement was by way of bird song recordings, provided by the Macaulay Library. Years later, following many phone conversations and finally a face-to-face meeting between Pete and Lab director John Fitzpatrick, the *Cornell Lab of Ornithology's Birds of North America* was born. This was followed by the *FeederWatcher's Guide to Feeder Birds,* the state-based CD-ROM series *Our Birds*, and the soon-to-be-released *Birder's Diary*, all under the Lab's name.

The Lab was impressed that Pete was encouraging feedback from anyone who had purchased his products and that upgrades could be downloaded online, free of charge, as improvements were completed. Nonetheless, before getting the Lab's seal of approval, the CD-ROMs were rigorously tested and repeatedly tweaked by a select handful of Lab staff, all of whom consider themselves advocates for the people who would be putting their faith, as well as their dollars, in the products. In return for staff time and expertise, the Lab receives a percentage of the proceeds, which help fund vital research and conservation work.

But the rewards don't stop there. "These CD-ROMs have tremendous educational value," says Lab director John Fitzpatrick. "They are designed to help anyone, regardless of age or background, learn more about birds. It's been shown that as people learn more about birds, they become more effective stewards of birds and the habitats they depend on. Yes, these are commercial products, but more important, they are tools for citizen science."

Pete Thayer is so passionate about the Lab's mission that he donated part ownership of his dotcom enterprise, WithoutBricks, to the Lab. WithoutBricks <www.withoutbricks.com>, perhaps even more than his CD-ROMs, is a perfect example of Pete's entrepreneurial spirit and commitment to birds and birding. It enables nature-based organizations to sell products and receive 15 to 20 percent of the net sales. To set up an affiliate store, an organization need do little more than place links on its web site and fill out some simple online forms. A template allows each organization to customize the look of its store and select which items to carry, from more than 7,000 offered at the WithoutBricks site. These include books, jewelry, bird-feeding supplies, artwork, videos, and more, including the many audio guides produced by the Lab.

In the true spirit of an entrepreneur, Pete has teamed up with other like-minded business entrepreneurs. Rather than carry inventory on all 7,000 store items, he simply makes them available *through* the shop. As customers place orders, an email is sent to one of two distributors—Common Ground Distributor and Gold Crest Distributing—and the items are shipped directly to the customer. This is one of several features that allows products to be offered at prices that rival those of that giant of all Web retailers, Amazon.com. "What better way for

A lot of great birders have raised glasses in this event

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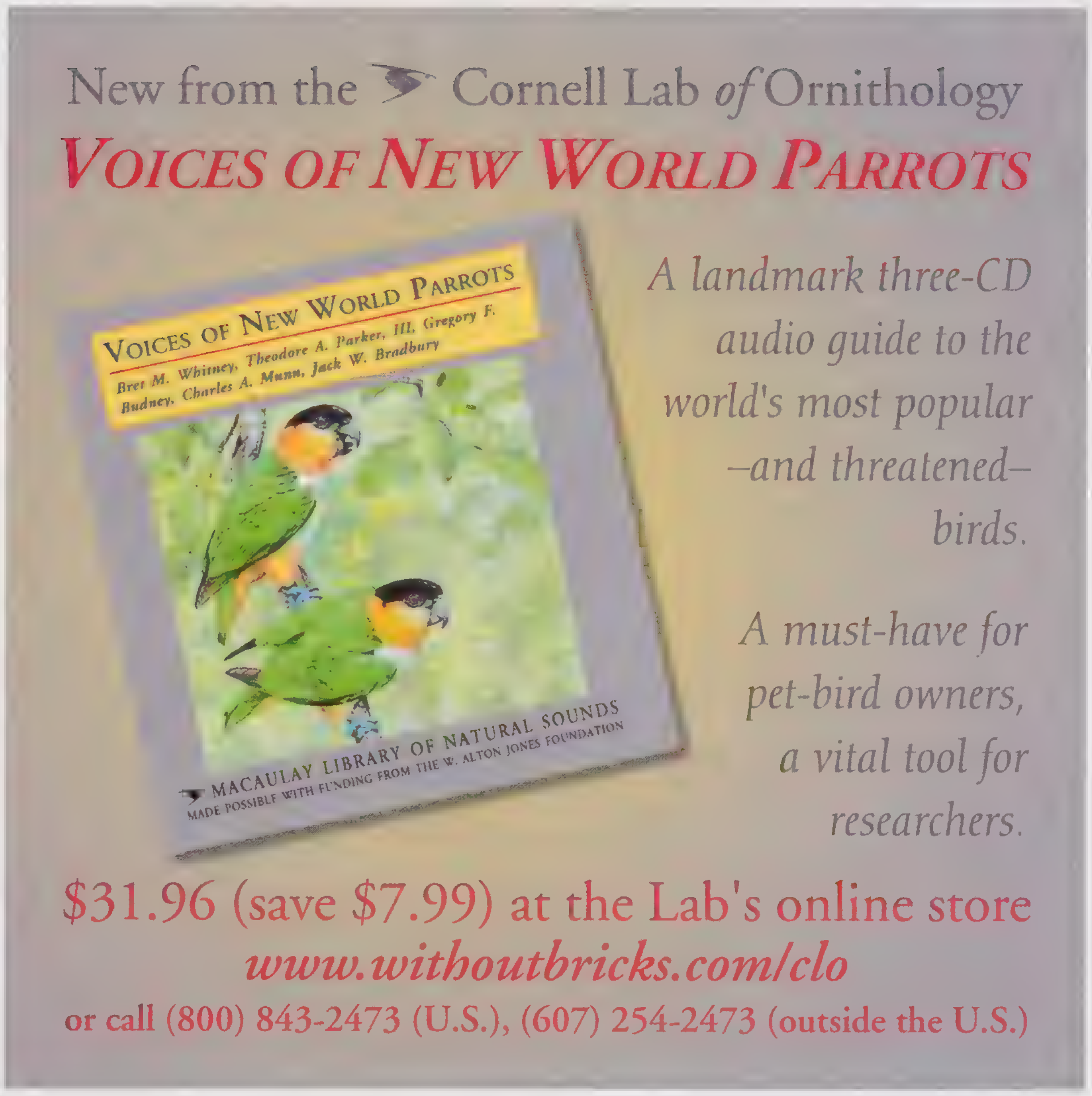

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an organization to raise money than by offering books and other items to members who would probably otherwise buy at Amazon.com, with no benefit to their organization?" Pete points out.

Since its launch in 1999, more than 175 organizations have set up affiliate stores, earning much-needed funds to implement their missions. Among the many nonprofits is the Lab of Ornithology itself. Thanks to its devoted members and friends, the Lab's store <www.withoutbricks.com/clo> is the highest-grossing store after Pete's own shop. "The key to a successful store is offering quality products and making it easy for the customer to order from the web site. The Lab does both," says Pete. "It has also taken advantage of the ability to completely customize its store. The graphics and color scheme are branded to the main page of the Lab's own web site." He adds that the Lab staff has made suggestions that improved the entire WithoutBricks enterprise, making people's ability to shop for a cause easier at all affiliate organizations.

Given how completely Pete has thrown himself into these cause-related undertakings, it's easy to forget that he was a celebrity of a different sort in his past life. For more than 20 years, Pete managed mutual funds and investment portfolios for Gateway Investment Advisers, in Cincinnati. He spent his days monitoring the options market, balancing equity portfolios, traveling to meet clients, and writing articles for investment magazines. His business savvy landed him as a guest on many finance-based TV shows, and he was featured in prestigious publications such as *Newsweek, Business Week, Money* magazine, *Forbes*, and *The Wall Street Journal.* When he bid farewell as president of the Gateway Fund in 1995, it was among the top five best-performing low-risk mutual funds.

Pete's distinguished business career, backed with an MBA from Harvard Business School, has been essential to his current role as founder and president of Thayer Birding Software. But all those years of traveling for Gateway also gave him a more complete experience with birds—just as crucial to someone running a business tailored specifically to birders. "I was often a speaker at investment conferences all over the world, so I ended up at some great birding locations. My favorites were Palm Springs and the Salton Sea, but I also enjoyed birding in Germany, Norway, and Belgium."

Pete continues to travel, but now strictly in birding mode. Kenya, Costa Rica, Panama, Papua New Guinea, Bolivia, Ecuador, Malaysia, Borneo—his "been there" list includes countries on seven continents. With his world list currently at 2,830, Pete is more than a quarter of the way to seeing all 10,120 of the world's known bird species. His North American list is hovering at an impressive 630, but, he jokes, "the way scientists keep splitting birds, I might just stay home and wait for new splits to get me to number 700."

In addition to birding, Pete spends his "free" time golfing, reading science-fiction stories, and—big surprise—working on web sites. One of these, birding.com, has long been hailed as the ultimate web site for birdbrains like him. The site features information about where to bird, tours and lodging, bird checklists, bird organizations, rare bird alerts, classified ads, and much more. It arrived at the cusp of the Internet revolution and has only gotten better since.

Of all that he has accomplished, Pete says his biggest reward is the feedback he continues to receive about the CD-ROMs. "One gentleman wrote to thank us for making the CDs, because now, for the first time in 20 years, he could hear warblers again," says Pete. "I also love the fact that beginning birders have this tool for helping them learn to identify birds all on their own. And I've had grandparents tell me how much their five- or six-year-old grandchild loves to play with the product. For kids, this could very well develop into a lifelong passion, just as it did for me. There is no bigger thrill in life than to be able to pass such a gift along for generations to come." ■

Allison Childs Wells is the Lab's director of communications and outreach.

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I SAY WHAT YOU MEAN

by Pete Dunne

Birding is a subculture (a.k.a. "cult"), and as such has its own standards, rituals, and language. Although English is certainly the foundation of birdspeak in America, it diverges widely from this commonly held ground. Beginning birders (and nonbirders) are often confused by the gulf between what birders say and what they mean.

Here is a quick reference guide to help clarify the true meaning of what birders say.

When birders say: "Oh, I'm not a lister." They mean: "My life list is less than 300."

When birders say: "I keep track of the birds I see, but I wouldn't call myself a lister." They mean: "My life list is approaching 500."

When birders say: "Sure, I'm a lister." They mean: "My life list just cracked 600. Ha!"

When birders say: "You bet I'm a lister." They mean: "Get between me and a life bird, Buster, and you're collateral damage."

When birders say: "I got a quick look at the bird. Not enough to satisfy but more than enough to clinch the identification." They mean: "I got a fleeting glimpse of a bird flying dead away into the sun. Somebody else said it was a Curlew Sandpiper."

When birders say: "I'm pretty sure that's what it was, but I'm going to check some field guide plates tonight to be certain." They mean: "The bird's as good as got a check mark in front of its name."

When birders say: "The bird was here a minute ago. You just missed it." They mean: "The bird hasn't been seen for at least 10 minutes."

When birders say: "You should have been here five minutes ago." They mean: "The bird hasn't been seen for over an hour."

When birders say: "Close? The bird was *right here!*" They mean: "The bird was half a football field away."

When birders say: "Oh, really close." They mean: "The length of an international airport runway."

When birders say: "Reasonably close." They mean: "The bird was a tiny speck."

When birders say: "Pretty far away." They mean: "It was an upended soda bottle half buried in mud, two time zones away, made animate by heat shimmer."

When birders say: "I've had these binoculars for 30-odd years and wouldn't part with them for anything." They mean: "I'm considering a binocular upgrade."

When birders say (after looking through someone else's spotting scope that has HD or ED glass): "Frankly, I don't see a lot of difference between your scope and mine—not for the money." They mean: "@#$%^&! Why didn't I go ahead and spend the extra money."

When birders say: "Well, what I enjoy most about birding is seeing the birds of my region." They mean: "I have alimony payments, a new spouse, a new mortgage, and two new cars, and there are rumors of cutbacks in my department. A birding trip to Ecuador? Not until the kids are out of college."

When birders say: "For my money, there has never been a better field guide than the good old . . ." They mean: "I'm more or less still locked in the wingbars and tailspots age of birding."

When birders say: "I *know* Sharp-shinned Hawks, and if *that* was a Sharp-shinned Hawk, then it has to be the biggest, rangiest, most. . . ." They mean: "Okay, you win. It was a Sharp-shinned Hawk."

When birders say: "I recall a conversation with David [Sibley] about primary extension and both of us agree that. . . ." They mean: "I was waiting in line for David Sibley to sign my book at a birding festival and this guy in front of me brought up Empidonax ID."

When birders say: "My ears have gotten so bad these last few years that I have to relearn warbler songs every year." They might have added (but didn't): "But then, I always did."

When birders say: "No problem. The bird is everywhere in that area." They mean: "I've seen one or two there."

When birders say: "Oh, the bird's there all right, but it takes a little time to dig one out." They mean: "You haven't got a prayer of seeing a Black Rail." ■

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